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KANSAS STATE UNIVERSITY

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UNDERGRADUATE CATALOG
1998–2000

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K-State Undergraduate Catalog 1998–2000

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Sidney Warner, Cimarron

Information

You may call toll-free for information about admission to Kansas State University.

Undergraduate students

Dial 1-800-432-8270 from any place in Kansas 24 hours a day. Outside of Kansas dial 785-532-6250.

Prospective students should contact:
Office of Admissions
Kansas State University
119 Anderson Hall
Manhattan, KS 66506–0102
E-mail: kstate@ksu.edu
http://www.ksu/Consider

Graduate students

Dial 1-800-657-1816, 24 hours a day. Outside the United States dial 785-532-6191.

Prospective students should contact:
Graduate School
Kansas State University
102 Fairchild Hall
Manhattan, KS 66506–1103
E-mail: ksugrad@grad.ksu.edu
http://www.ksu.edu/grad

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Equity in athletics

In accordance with the Equity in Athletics Disclosure Act, an annual report pertaining to K-State's athletic programs is available to prospective students, students, and to the public in the following locations: Intercollegiate Athletics, Office of Admissions, Office of Registrar, Office of Student Life, and Hale Library.

Any questions regarding the Equity in Athletics Disclosure Act should be directed to the Office of Unclassified Affairs and University Compliance, Kansas State University, 112 Anderson Hall, Manhattan, Kansas 66506.

Notice of Nondiscrimination

Kansas State University is committed to a policy of nondiscrimination on the basis of race, sex, national origin, disability, religion, age, sexual orientation, or other nonmerit reasons, in admissions, educational programs or activities, and employment (including employment of disabled veterans and veterans of the Vietnam Era), all as required by applicable laws and regulations. Responsibility for coordination of compliance efforts and receipt of inquiries, including those concerning Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act, has been delegated to Jane D. Rowlett, Ph.D., Director of Unclassified Affairs and University Compliance, Kansas State University, 111 Anderson Hall, Manhattan, KS 66506–0124 (785-532-4392).

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About the Catalog

The K-State *Undergraduate Catalog* is a reference for those interested in academic policies, procedures, and programs of the university. Refer to the table of contents or the index for specific topics of interest.

Degree requirements and programs are organized by colleges and departments. Course descriptions are provided to help you and your academic advisor plan your academic choices.

Course Descriptions

The following course description key explains the system used for courses listed throughout the catalog.

Sample course description

◆ECON 507. The Japanese Economy. (3) II. Analyzes Japan's growth, productivity change, income distribution, government policies, agriculture, industrial structure, labor relations, education and technology, and international trade and finance. Emphases will be on U.S.–Japanese competition and comparisons. Pr.: ECON 110.

The diamond (◆) indicates the course has been approved for university general education program credit.

The letters **ECON** denote the department in which the course is offered (in this case, Economics).

The three digits of the course number **507** represent the level of the course.

Course number system:

000–099	Not applicable toward degree requirements.
100–299	Lower division undergraduate. Designed as freshman or sophomore course.
300–499	Upper division undergraduate. Designed as junior or senior course.
500–699	Upper division undergraduate. Primarily for a junior or senior, but also may be taken for graduate credit. A course numbered 500 may be taken for graduate credit only in a graduate student's minor field. A course numbered 600 may be taken for credit in a graduate student's major field.
700–799	Graduate and upper division, primarily for graduate level.
800–899	Graduate level for master's course or professional course beyond the undergraduate level.
900–999	Graduate level, primarily for doctoral candidate.

The number in parentheses (**3**) following the course title indicates the units of credit given for the course.

The **I, II, S,** and/or **intersession** following the course title indicate the semester, or semesters, each course is usually offered; **I** stands for fall semester, **II** for spring, **S** for summer term, and **intersession** for the term between semesters.

The abbreviation **Pr.** indicates prerequisites for the course. In the sample course, students would be required to have completed ECON 110 before enrolling for ECON 507. Some courses may allow or require concurrent enrollment in other courses. This is indicated by the abbreviation **Conc.**

Faculty Lists Key

In the departmental sections, faculty members are listed by their last names. Those on the graduate faculty have an asterisk following their names.

An all-inclusive faculty and administration section precedes the index. This section lists each faculty member's full name, academic degrees, and year of first appointment at K-State (in parentheses). Those on the graduate faculty have an asterisk following their names.

Contacts

All phone numbers are 785 area code, except where noted. All addresses are Manhattan, Kansas, 66506, except where noted.

Online Catalog

This catalog is available at *http://www.ksu.edu/courses/* on the web.

Other Publications

Other K-State publications are available on request from the offices listed below.

Course schedule booklet

The *Course Schedule*, a listing of courses offered each semester, is available in the following places:

- World Wide Web
  http://www.ksu.edu/courses
- K-State Student Union Bookstore
  K-State Student Union, First Floor
  785-532-6583

For prospective students

Office of Admissions
119 Anderson Hall, 785-532-6250
http://www.ksu.edu/Consider/
http://www.ksu.edu/admit

Guide to Majors and Campus Life: An overview of academic programs and student life.
http://www.ksu.edu/Consider/Viewbook/1hereswhy.html

Apply Now: Detailed information on admission, financial aid and housing; includes application information and forms.
http://www.ksu.edu/Consider/apply/Content.html

For prospective graduate students

Graduate School
102 Fairchild Hall, 785-532-6191 or
1-800-651-1816
http://www.ksu.edu/grad/publictn.htm

Graduate Studies: Overview of K-State's graduate programs and representative research facilities that includes photos and admission information.
http://www.ksu.edu/grad/publictn.htm

Graduate Catalog: Descriptions of graduate programs and courses.
http://www.ksu.edu/grad/publictn.htm

Graduate Handbook: Presentation of university policies on graduate education adopted by the Graduate Council on behalf of the Graduate faculty.
http://www.ksu.edu/grad/

For continuing education

Division of Continuing Education
College Court Building, 785-532-5687
http://www.dce.ksu.edu/

Evening College: Information and course descriptions for courses starting after 4 p.m. on campus during fall and spring semesters. Available in December and July.
http://www.dce.ksu.edu/dce/evening/evening.html

Distance Learning Catalog: Listing of courses—offered through a variety of delivery methods—that can be taken in your own community.
http://www.dce.ksu.edu/dce/distance/

Summer Brochure for Teachers: Listing of courses of interest to educators. Available each April.

About the University

Kansas State University

The university was founded February 16, 1863, established under the Morrill Act, by which land-grant colleges came into being.

At first the university was located on the grounds of the old Bluemont Central College, chartered in 1858, but in 1875 most of the work of the university was moved to the present site.

The 664-acre campus is in northern Manhattan, convenient to both business and residential districts. Under an enactment of the 1991 Kansas Legislature, the Salina campus was established through a merger of the former Kansas College of Technology with the university.

Additional university sites include 18,000 acres in the four branch locations of the Agricultural Experiment Station—Hays, Garden City, Colby, and Parsons—and 8,600 acres in the Konza Research Prairie jointly operated by the AES and the Division of Biology.

One of the six universities governed by the Kansas Board of Regents, Kansas State University continues to fulfill its historic educational mission in teaching, research, and public service.

Objective of the educational program

The objective of the educational program at Kansas State University is to develop individuals capable of applying enlightened judgment in their professional, personal, and social lives.

To that end the university program is designed:

I. To provide full and efficient counseling and guidance to students at the university. Specifically, this means to:

A. Learn and make known to students all that is possible and useful about their interests, aptitudes, and abilities.

B. Apply that knowledge to the students' choice of courses and curricula as fully as possible without encroaching harmfully on their initiative and feeling of self-responsibility.

C. Provide continuing guidance for students according to their needs.

II. To prepare students for an occupation or a profession which includes an organized body of information and theory so they may realize their creative potential. More specifically this means that students should acquire:

A. The ability to recognize and master fundamental principles in their fields of specialization.

B. The knowledge basic to their special fields of study.

C. The ability to reason critically from facts and recognized assumptions to useful technical conclusions.

D. The basic skills associated with their fields of study.

E. A professional attitude in their chosen work.

III. To provide all students with an opportunity to gain the knowledge and abilities members of a democratic society need, whatever occupation or profession they expect to enter. Specifically, this means that through its program the university undertakes to help the student:

A. Develop communication skills.

B. Develop the ability to apply critical and creative thinking to the solution of theoretical and practical problems.

C. Understand the basic concepts of the natural sciences, the interrelations of the natural and social sciences, and the impact of science on society.

D. Comprehend and evaluate the processes and institutions in society at home and abroad, and develop a dynamic sense of personal responsibility as effective citizens in a democratic society.

E. Develop habits of self-evaluation, responsibility, and enterprise that will increase the effectiveness of the educative process in college, and provide the basis for continued self-improvement.

F. Develop a well-adjusted personality, good character traits, and a sound philosophy of life.

G. Prepare for effective participation in family life.

H. Utilize actively and fully the capacity for aesthetic appreciation and enjoyment.

IV. To stimulate the faculty and students to extend the boundaries of knowledge through critical and creative thinking and experimentation.

V. To provide the facilities for extending education outside the boundaries of the campus to the members of the community that the institution serves.

Accreditation

Kansas State University is fully accredited by the North Central Accrediting Association and by various professional accrediting agencies. Credit earned at K-State is transferable to other institutions.

Faculty

The faculty at Kansas State University are dedicated to excellence in teaching, student advising, research, extension education, scholarly achievement, and creative endeavor.

K-State recognizes superior teaching with annual faculty awards. Citations for the Outstanding Teachers of the Year and for Distinguished Graduate Faculty Members are presented at Commencement. The university also honors faculty members who contribute to the expansion of knowledge in their respective fields.

The faculty assume a major responsibility to participate in outreach activities that serve the citizens of the state, and many hold leadership positions in their disciplines and in professional organizations.

Calendar

Additional academic dates and deadlines can be found at *http://www.ksu.edu/calendar/eventview.cgi/registrar/academic* on the World Wide Web.

Summer Semester 1998

May 18, Monday Session I (6-week)
Enrollment and/or fee payment.

May 19–June 26 (6-week)
Session I.

May 25, Monday
University holiday.

June 8, Monday Session II (8-week)
Enrollment and/or fee payment.

June 9–July 31
Session II.

June 29, Monday Session III (6-week)
Enrollment and/or fee payment.

June 30–August 7
Session III.

July 3, Friday
University holiday.

August 1998 Intersession

August 3–21, Monday–Friday
Intersession.

Fall Semester 1998

August 19–22, Wednesday–Saturday
Enrollment and/or fee payment.

August 24, Monday
Semester begins.

September 7, Monday
University holiday.

November 25–27, Wednesday–Friday
Student holiday.

November 26–27, Thursday–Friday
University holiday.

December 11, Friday
Last day of semester.

December 11–12, Friday–Saturday
Commencement.

December 14–18, Monday–Friday
Semester examinations.

January 1999 Intersession

December 28, 1998–January 13, 1999, Monday–Friday
Intersession.

Spring Semester 1999

January 9 and 11–13, Saturday, Monday–Wednesday
Enrollment and/or fee payment.

January 14, Thursday
Semester begins.

January 18, Monday
University holiday.

March 22–26, Monday–Friday
University holiday.

May 7, Friday
Last day of semester.

May 10–14, Monday–Friday,
Semester examinations.

May 14–15, Friday–Saturday
Commencement.

May 1999 Intersession

May 17–June 4, Monday–Friday
Intersession.

May 31, Monday
University holiday.

Summer Semester 1999

May 17, Monday Session I (6-week)
Enrollment and/or fee payment.

May 18–June 25
6-week, Session I.

May 31, Monday
University holiday.

June 7, Monday Session II (8-week)
Enrollment and/or fee payment.

June 8–July 30
8-week, Session II.

June 28, Monday Session III (6-week)
Enrollment and/or fee payment.

June 29–August 6
6-week , Session III.

July 5, Monday
University holiday.

August 1999 Intersession

August 2–20
Intersession.

Fall Semester 1999

August 18–21, Wednesday–Saturday
Enrollment and/or fee payment.

August 23, Monday
Semester begins.

September 6, Monday
University holiday.

November 24–26, Wednesday–Friday
Student holiday.

November 25–26, Thursday–Friday
University holiday.

December 10, Friday
Last day of semester.

December 10–11, Friday-Saturday
Commencement.

December 13–17, Monday–Friday
Semester examinations.

January 2000 Intersession

December 27, 1999–January 12, 2000, Monday–Friday
Intersession.

Spring Semester 2000

January 8, Saturday
Enrollment and/or fee payment.

January 13, Thursday
Semester begins.

January 17, Monday
University holiday.

March 20–24, Monday–Friday
Student holiday.

May 5, Friday
Last day of semester.

May 8–12, Monday–Friday
Semester examinations.

May 12–13, Friday–Saturday
Commencement.

May 2000 Intersession

May 15–June 2, Monday–Friday
Intersession.

May 29, Monday
University holiday.

Summer Semester 2000

May 15, Monday Session I (6-week)
Enrollment and/or fee payment.

May 16–June 23
6-week, Session I.

May 29, Monday
University holiday.

June 5, Monday Session II (8-week)
Enrollment and/or fee payment.

June 6–July 28
8-week, Session II.

June 26, Monday Session III (6-week)
Enrollment and/or fee payment.

June 27–August 4
6-week , Session III.

July 4, Tuesday
University holiday.

August 2000 Intersession

July 31–August 18
Intersession.

Glossary and Abbreviations

A/Pass/F: A grading option in which a student earning a grade of A in a course will have an A recorded for that course; a grade of B, C, or D will be recorded as a Pass; and a grade of F will be recorded as an F.

Academic load: The total number of credit hours enrolled in during one semester.

Academic warning: (W) An indication that a student is in academic difficulty which could lead to dismissal from the university.

Advanced standing: Having credit awarded for previous work or testing.

Advisor: A department or college-based faculty member who helps students achieve their educational goals by providing guidance on courses, program requirements, prerequisites, programs of study, and policies and procedures.

Audit: To attend a course regularly without participating in course work and without receiving credit.

Bachelor of arts degree: (B.A.) Courses selected from a variety of disciplines with concentrations in one or two areas. A modern language is required for a B.A. degree.

Bachelor of science degree: (B.S.) A specified program of required courses with fewer electives than the B.A. A modern language is not required.

Baccalaureate: Refers to the bachelor's degree.

Classification: Level of progress toward a degree with classifications of freshman, sophomore, junior, or senior, depending on the number of semester hours completed.

College: An academic unit of the university. Kansas State University has nine colleges.

Cooperative education (co-op): The integration of academic experience with planned employment experiences that relate to a student's academic major or career goals. The work experience supplements and complements the curriculum.

Concurrent enrollment: (Conc.) Taking a course during the same semester as another.

Course: A unit of study a student enrolls in during a semester.

Credit by examination: Credit received when a student takes an oral or written examination without enrolling for a course.

Credit hour: (Cr.) A unit of measurement used in determining the quantity of work taken. Each credit hour is roughly equivalent to one hour of course time per week. For example, a course meeting three hours a week would be a three-credit-hour course.

Credit/No Credit: (C/NC) A grading option with successful completion of a course recorded as Credit and failure as No Credit. No other grades are given for such courses and they are not figured into the grade point average.

Curriculum: A program of courses that meets the requirements for a degree in a particular field of study, also referred to as a major.

Degree program: Courses required for completion of a particular degree.

Department: A unit within a college representing a discipline.

Discipline: An area of study representing a branch of knowledge, such as mathematics.

Dismissal: (D) A student who neglects his or her academic responsibilities may be dismissed on recommendation of an academic dean.

Double major: Having two programs of academic study.

Drop/Add: Changing the student's course schedule by adding and/or dropping a course.

Dual degrees: A student may elect to pursue two degrees at one time.

Electives: Courses chosen by a student that are not required for the major or minor. The number of hours of electives required varies according to student's major.

Enrollment: The process of selecting courses and having courses reserved.

Equivalent: Equiv.

Extracurricular: Activities such as band or debate for which a student may earn credit toward graduation. Extracurricular activities are counted as electives.

Financial aid: Help for a student who lacks funds to pay for college. Aid is available from grants, loans, scholarships, and work/study employment.

Grade point average: (GPA) A measure of scholastic performance. A GPA is obtained by dividing the number of grade points by the hours of work attempted, where an A = 4 points, a B = 3 points, a C = 2 points, a D = 1 point, and an F = 0 points.

Hour: The unit by which course work is measured. The number of semester hours assigned to a course is usually determined by the number of hours a course meets per week.

Intersession: Courses offered between fall and spring semesters, and after spring semester and prior to summer semester.

Lecture: (Lec.) A course wherein the teaching is done primarily through oration.

Major: The subject or subject areas upon which a student chooses to place principal academic emphasis, also referred to as curriculum.

Minor: A systematic program of study in an area of emphasis outside a student's major.

Option: An approved group of courses creating a specialty within a major field of study.

Orientation: Activities designed to help the new student become acquainted with the university.

Prerequisite: (Pr.) A requirement, usually credit in another course, which must be met before a particular course can be taken.

Recitation: (Rec.) A small section usually taken in conjunction with a lecture.

Scholastic honors: An award an undergraduate receives based on the excellence of K-State academic work.

Secondary major: Interdisciplinary major which must be completed along with a first major course of study.

Special student: An undergraduate student taking courses at K-State but not regularly enrolled in work toward a degree.

Transcript: An official copy of a student's permanent academic record.

Transfer student: A student who terminates enrollment in another college or university and subsequently enrolls at K-State.

Undergraduate student: A university student who has not received a bachelor's degree.

Variable: (V/Var.). The credits earned in some courses may vary.

Admission

Larry Moeder, Acting Director
119 Anderson Hall, Manhattan
785-532-6250
1-800-432-8270 (Kansas only)
E-mail: kstate@ksu.edu
http://www.ksu.edu/admit

General Admission Information

Undergraduate students interested in attending Kansas State University on the main campus in Manhattan, or the College of Technology and Aviation campus in Salina, may request information and assistance by writing, calling, or sending e-mail to the Admissions Office.

The Admissions Office is located on the Manhattan campus and is open weekdays from 8 a.m. to noon and 1 p.m. to 5 p.m. All campus offices are closed on weekends.

Undergraduate students wishing to apply for admission may do so by submitting the traditional paper application form with appropriate application fee or by submitting the electronic application via the World Wide Web and providing credit card information for the application fee or sending the fee by personal check or money order. Students applying electronically will not be admitted until the application fee has been received.

Access the electronic application at *http://www.ksu.edu/admit/application.html.* All supporting documents and credentials must be in paper format to be considered as official for admission purposes.

All academically qualified students are currently admissable to the university. Beginning with the fall of 2001, students will be required to meet the standards for qualified admission described below.

No qualified student will be denied admission to the university on the basis of race, sex, national origin, handicap, age, sexual orientation, or other nonmerit reasons.

Campus Visitation

Students and parents are welcome and encouraged to visit the campuses. For a visit to the Manhattan (main) campus please write or call the Admissions Office (see address and phone information above). For maximum benefit from your visit it is wise to plan your visit two weeks in advance so that appropriate appointments can be made and admission representatives can be available for consultation concerning your educational plans.

Students and parents wishing to visit the College of Technology campus in Salina are encouraged to contact the Office of College Advancement, 100 Technology Center, Salina campus. The phone number is 785-826-2639 or 1-800-248-5782 (Kansas only). The office is open during the same standard business hours, and admissions representatives are available to schedule campus visits and to provide information regarding College of Technology programs.

Glossary of Terms

Apply for admission: The process of submitting written or electronic application and supporting credentials so that an official determination of eligibility to attend the university can be made.

Enrollment: The process of selecting courses and arranging a schedule of classes for the semester.

International students: Individuals who are not citizens or permanent residents of the United States.

New freshmen: High school graduates with no earned college credits after high school graduation. Students taking college-level work while in high school are considered new freshmen.

Non-degree students: Students not pursuing a degree who have been admitted for special purposes or at the discretion of a director. Generally, these students are limited to 15 hours of credit from K-State. Other restrictions may apply. Non-degree students will not qualify for financial assistance.

Official test scores: ACT, SAT, and TOEFL results that are received directly from the testing service via magnetic tape reports or formal mail service. Scores noted on high school transcripts, personal reports, etc., are not official results.

Official transcript: A transcript that is sent directly by mail from the registrar of a credit-granting institution to the K-State Admissions Office. Hand-carried documents, sealed envelopes, fax documents, personal grade reports, etc., are not official records.

Readmitted students: Any student who has previously been admitted and attended K-State courses on the Manhattan campus at any time since high school graduation. Any student who was admitted to and attended classes on the College of Technology campus since fall of 1991.

Registration: The process of paying fees.

Special students: Students not pursuing a degree but meeting all standard admission requirements. Special students will not qualify for financial assistance.

Transfer students: Students who have earned college-level credit since high school graduation.

Freshman Admission

See the Qualified Admissions section for new admissions policies taking effect in fall 2001.

Kansas high school graduates

Admission to Kansas State University is granted to any individual who has graduated from an accredited Kansas high school. Students are encouraged to initiate the application process early in the senior year by submitting a completed application and the nonrefundable $20 application fee. To complete student records each student must submit official scores from the American College Test Battery, and an official eight-semester transcript showing the date of high school graduation.

Out-of-state high school graduates

Students graduating from non-Kansas accredited high schools are required to show strong academic class rank and grades and good scores on the American College Test Battery. Students must submit a completed application form, the nonrefundable $20 application fee, official scores from ACT, and a six- or seven-semester transcript early in the senior year. To complete student records, each student must have a final transcript sent showing date of high school graduation.

Home-schooled students

Home-schooled students will be considered for admission on the same basis as traditional high school graduates. Students should submit ACT results and descriptive information regarding their high school program of study. Course descriptions or portfolios are accepted in lieu of an accredited diploma. Contact the Office of Admissions if you have questions about home schooling qualifications or requirements for admission.

GED applicants

Adults who have completed the GED rather than the traditional high school diploma are considered for admission if the high school work they completed was of good quality and if they show promise of collegiate success through results on the American College Test Battery. Such students should submit a completed application form, the nonrefundable $20 application fee, official scores from ACT, a copy of the high school transcript showing work completed prior to withdrawal, and official results of the GED. All standard admission procedures and requirements apply.

High school prerequisites

Each entering freshman student should have completed the high school mathematics courses necessary for his or her K-State curriculum. A listing of the mathematics prerequisites for each university curriculum appears in the Degrees section of this catalog.

The Kansas Board of Regents recommends that a Kansas Regents university preparatory curriculum include the following 15 units:

- Four units of English, including one unit of literature and one unit of oral expression.
- Three units of mathematics, including Algebra I and II, one-half unit of geometry, and one-half unit of trigonometry. (See the Degrees section of this catalog for specific curricular requirements.)
- Three units of social studies, including American history, government, and economics.
- Three units of natural sciences, preferably biology, chemistry, and physics.
- Two units of foreign languages. (These may be in one foreign language or a combination of two foreign languages.)

American College Test (ACT)

All new freshmen applicants, regardless of age and non-traditional status, are required to take the ACT and have official test results forwarded to the university. The test should be taken on one of the national test dates throughout the year. If the applicant anticipates applying for scholarships, the October test is preferable. Test centers are available nationally. Information about the ACT is available from the Admissions Office and from your local high school counseling office.

Scholastic Aptitude Test (SAT)

In some situations, students are unable to participate in the ACT program but do have access to the SAT program offered through the College Board Services. K-State will substitute SAT results for purposes of making admission decisions, but students should take the ACT so that all data made available through that service can become part of the student's advising portfolio. Specific questions concerning standardized testing should be referred to the director of admissions.

Transfer Admission

See the Qualified Admissions section for new admissions policies taking effect in fall 2001.

Transfer qualifications

Students who have earned college or university credit after high school graduation must have a minimum cumulative GPA of 2.0 on a 4.0 scale to qualify for admission to the university. The following programs of study require higher grade point averages.

- All College of Architecture, Planning, and Design programs
- All College of Engineering programs
- All College of Business programs (does not apply to pre-business)
- Mass communication (journalism)
- Psychology
- All health-related professions
- All teacher education programs (does not apply to pre-professional education)

For information regarding specific program requirements contact the college's dean's office or refer to the college's academic section of this catalog.

Transfer application

Application procedures require a completed application form, the $20 nonrefundable application fee, and complete official transcripts from all previous colleges or universities.

Transfer applicants who have earned less than 12 hours of transfer credit must also submit an official final high school transcript showing their graduation date and ACT results. Information about institutions previously attended must be furnished upon application and transcripts must be furnished regardless of the applicant's wishes concerning use of previously earned credit.

The College of Arts and Sciences offers an option to enter the university without declaring a specific program of study. This program is limited to students who have earned less than 60 college-level credit hours. If you have earned 60 or more credit hours you must specify a specific major.

All applicants to the College of Business Administration must begin their studies in pre-professional business administration. Students who have earned more than 75 college-level credits and have less than 2.5 GPA will not be admitted to the College of Business Administration.

All documentation should be sent to the Office of Admissions in Manhattan. Hand-carried or personally delivered transcripts are unofficial even though they carry the college seal and/or signatures that are placed on official records. All documents submitted become the property of the university and cannot be returned or copied.

Transcript evaluations

Most academic credits from accredited junior colleges and universities are transferable to K-State. One-half of the hours required for a K-State baccalaureate degree can be taken at a two-year college.

Official evaluation of transfer credit is part of the admission procedure. Application of transfer credit toward degree requirements is determined by each college and major department.

General education requirements for transfer students

Transfer students entering Kansas State University beginning in fall 1997 and/or transferring credit earned from accredited two-year or four-year institutions after summer 1997 are required to complete a minimum number of university general education credit hours at K-State. The minimum number of university general education credit hours required is based upon total number of completed transfer credit hours accepted at K-State at the time of admission to the university.

Number of completed transfer credit hours accepted at K-State on initial date of entry	Minimum university general education credit hours to be taken at K-State
0–14	18
15–29	15
30–44	12
45–59	9
60 or more	6

Each transfer student is required to complete a minimum of 6 credit hours of K-State upper-division university general education courses (300 and above) as specified in the program in which they will graduate. Please refer to the academic section of your major for precise requirements for degree completion.

See the Degrees section of this catalog for a list of courses currently approved as general education courses by the Facuty Senate. This list will change as courses are deleted and approved.

Please note that the Kansas Board of Regents defines basic skills courses as separate from university general education. K-State basic skills courses include Expository Writing courses, College Algebra, and Public Speaking. Therefore, these courses will not fulfill your general education requirements.

Community college articulation

K-State subscribes to the transfer articulation agreement with the 19 Kansas community colleges. Students who have received an associate of arts degree from a Kansas community college are guaranteed junior classification.

All credits of an associate degree are not necessarily applicable toward a baccalaureate degree; additional freshman, sophomore, and general education courses may be required to meet degree requirements.

Course equivalency information on all Kansas community colleges is available on the web. Access this information to look up specific course transferrability at *http://www.ksu.edu/admit/trans.html*.

Military evaluation for credit

The evaluation of military training and experience is conducted in the Office of Admissions. An evaluation of military experience is optional and has no bearing on admission status to K-State. This evaluation does not include evaluation of transfer work from other educational institutions.

The evaluation of documents includes DD-214, DD-295, certificates of completion, Defense Language Institute transcripts, Academy of Health Sciences at Fort Sam Houston transcripts, and AARTS transcripts. Active military personnel may have their current, primary MOS evaluated, provided it has been validated by a performance evaluation within the last 12 months.

Credit awarded through military credential evaluation will be recorded on the K-State transcript at the time the student is admitted to a degree seeking program at K-State and enrolls in K-State courses.

In general, the university follows the recommendation given in *A Guide to the Evaluation of Educational Experiences in the Armed Services* published by the American Council on Education as these recommendations apply to a student's K-State degree program. *Kansas State University does not award physical education credit for basic training.* Credit in military science is granted based on length of time in service and rank upon discharge. Military correspondence courses and courses which last less than two weeks are not recognized for college-level credit. Credits resulting from military evaluations granted by other institutions are not transferable to K-State.

Qualified Admission

Students applying for admission for fall 2001 or later must meet one of the following:

High school graduates must:

- Achieve an ACT score of 21 or above or an SAT of 990 or above; or
- Rank in the top third of the graduating class at the end of the seventh or eighth semester; or
- Complete the precollege curriculum:
  4 units of English or language arts.
  3 units of natural science with a least one unit of chemistry or physics.
  3 units of math to include Algebra I, Algebra II, and Geometry.
  3 units of social sciences including U.S. History, U.S. Government, and one additional course.
  1 unit of computer technology, which may be met by passing a proficiency examination offered by the university.

Resident students must have a 2.0 in the precollege curriculum.

Nonresident students must have a 2.5 in the precollege curriculum.

Requirements will differ depending on the residency status of the individual. Students who are officially nonresident but eligible for special fee status will be evaluated for admissibility on the nonresident requirements.

GED graduates must:

- Achieve an overall GED score of 50 points or higher.

Transfer students with fewer than 24 transferable credit hours must:

- Meet the conditions for high school graduates and
- Achieve a cumulative college GPA of 2.0.

Transfer students with more than 24 transferable credit hours must:

- Achieve a cumulative GPA of 2.0.

Kansas resident adult students

Kansas resident adult students applying as first-time freshmen with a Kansas high school diploma or GED score of 50 or higher will be admitted if 21 or older.

Special and Nondegree Student Admission

Several categories of special and non-degree students exist at K-State. All students are subject to stated requirements and are responsible for payment of all fees, regular attendance at classes, and maintenance of satisfactory standing. Special and non-degree options are not available for international students on student visas.

Special student applicants

Students who do not intend to become candidates for a degree may apply for admission as special students. Such students must submit the traditional application, application fee, test scores, and appropriate transcripts. Special student applicants must meet standard admission requirements. Special and nondegree-seeking students are not eligible for financial assistance.

Nondegree-seeking student applicants

Some students may be admitted as nondegree-seeking students at the discretion of the director of admissions. Nondegree-seeking students must submit the standard application, application fee, test scores, and appropriate transcripts. These students will be allowed to complete a maximum of 15 semester hours in non-degree status. In order to pursue work beyond the 15 hour limit, students must apply for regular admission and meet all requirements. Nondegree-seeking students on the Salina campus are required to sign an agreement specifying the terms of their admission.

High school students

Outstanding high school juniors and seniors may be admitted as special students to take courses while completing their high school requirements. High school students must submit the standard application, application fee, a recommendation from the high school, an outstanding high school academic record, and specify the courses in which they plan to enroll.

Younger students may be granted admission under special circumstances. In addition to the documents mentioned above, those students must file a letter of consent from one of the students' parents and a letter of approval to enroll in the selected class from the K-State department offering the class.

The university monitors the progress of all pre-college students very carefully. Students are approved for enrollment on the basis of space available in the selected class and success in prior university course work, if applicable.

International Admission

For purposes of admission, international applicants are defined as all persons who are not citizens or permanent residents of the United States.

In most cases, international applicants seeking admission to Kansas State University must meet the same academic standards for admission as those required of American students. There are wide variations, however, between educational systems throughout the world that make exact comparisons of educational standards difficult. International applicants are selected on the basis of their prior academic work, English proficiency, probability of success in the chosen curriculum (as evidenced by prior work in the academic area involved), and certification of adequate financial resources.

International applicants must submit a completed international application form, a $45 nonrefundable application fee, translated secondary schooling records, results from the Test of English as a Foreign Language (TOEFL), notarized affidavit of financial sponsorship, and when applicable, translated college transcripts.

TOEFL/English proficiency

A minimum score of 550 on the TOEFL is required for admission. Proficiency also may be demonstrated by passing a full academic year of college-level freshman English (i.e., equivalent to ENGL 100 and ENGL 120) with a grade of C or better at an accredited institution of higher education in the United States.

Deadlines for international application

1. For students currently studying in the United States:

Apply by	*For*
June 15	Fall semester
October 15	Spring semester
April 1	Summer semester

2. For students outside the United States:

Apply by	*For*
April 15	Fall semester
July 15	Spring semester
January 1	Summer semester

Advanced credit for international evaluation

The following methods are used by Kansas State University to validate the awarding of advanced standing credit for international students who have completed work in their home countries at the postsecondary level:

1. Credit is granted based upon recommendation by recognized academic publications, primarily the *World Education Series* of American Association of Collegiate Registrars and Admissions Officers.

2. Validation by a comparable credit-granting department at Kansas State University. Students initiate validation of prior academic experiences through the transfer coordinator in the Office of Admissions or their college dean's office. Validation by one of the following two options will be at the discretion of the credit-granting department.

Option A: Course-by-course evaluation examination by comparable K-State academic department.

Option B: The advisor and/or academic dean's office makes a preliminary evaluation of the level a student has completed and begins the student at that level. Upon successful completion of that course, all related lower-level courses in that area, as determined by the department granting credit, would be validated and credit awarded.

English Proficiency

Admission requirements

All undergraduate students whose primary language is not English must show proficiency in English before being admitted. Students may do this by presenting acceptable results from TOEFL, SAT or ACT. If the student cannot show adequate proficiency the following conditional admission options may be offered:

1. Full-time study in the English Language Program before pursuing academic studies.

2. A combination of part-time study in the English Language Program and part-time study in his or her academic area.

Enrollment requirements

All new students whose primary language is not English must demonstrate English Language proficiency before completing enrollment for the first time at the university. This requirement applies to international and non-international, permanent residents, immigrants, transfer and non-transfer student alike. An assessment test of written and spoken proficiency is given by the English Language Program prior to each enrollment period. If results of the student's proficiency level indicate inadequate preparation, the director of the English Language Program may recommend one of the following conditional enrollment options.

1. Full-time study in the English Language Program until adequate proficiency is demonstrated.

2. A combination of part-time study (6 hours) in the English Language Program and part-time study (6 hours) in the academic area until adequate proficiency for full-time academic study is demonstrated.

3. Full enrollment in the academic program with no English language requirements.

Fraudulent Applications

Individuals who withhold or provide fraudulent information on applications for undergraduate admissions or readmissions are subject to immediate dismissal from the university. The decision for immediate dismissal will be made by the director of admissions. This decision will be made after a complete and thorough review of the situation and an individual conference with the student involved. The individual dismissed has the right to appeal the decision to the committee on academic policy, whose decision will be final.

Readmit Students

A readmit is any undergraduate student who has previously been admitted and attended K-State courses on the Manhattan campus at any time since high school graduation, or any undergraduate student who was admitted to and attended classes on the Salina (College of Technology and Aviation) campus since fall 1991.

Students need to reapply and be readmitted if they have graduated from K-State and wish to return for or continue further undergraduate work, have not been enrolled for one or more semesters at K-State or, have been dismissed from the university one or more semesters previously. There is no readmission application fee.

Graduate students who have attended graduate school at K-State or earned a K-State graduate degree, but have never been an undergraduate student at K-State, must file a new student application and pay the $20 application fee.

Students must be readmitted to a primary major. A minor or secondary major can be added once enrolled. Students who have graduated from K-State cannot be readmitted to seek or complete a minor or secondary major.

The application deadline for readmitting students is five working days prior to the scheduled enrollment date. Students submitting applications during the final five days before the first day of classes will enroll during late enrollment and will be assessed the $50 special handling fee.

Academic Advising

Advising Responsibilities

Kansas State University is committed to providing effective advising services to students as an essential component of their educational experience.

Advising generally is required as a condition for enrollment, especially for new students. Continuing students are encouraged to seek academic advising regularly throughout their academic careers. *Students are responsible for initiating advising contacts and preparing for advising sessions.*

Department- and college-based advisors are available to all students for assistance in assessing educational goals, planning programs of study, understanding program requirements, and knowing policies and procedures.

Ultimately, students are themselves responsible for fulfilling all the requirements of the curriculum in which they are enrolled. The intellectual mentoring relationship between academic advisor and student is protected by confidentiality and strengthened by listening with understanding to student concerns. Intellectual mentoring by the academic advisor fosters:

1. Development of an awareness of available choices, alternatives and resources;

2. Guidance with decision making;

3. Encouragement to expand horizons by full participation in university life; and

4. Promotion of readiness to meet career, life and graduate/professional school challenges.

Students are expected to take responsibility for a successful university experience and effective advising sessions by:

1. Participating in orientation programs, providing standardized test scores as required by Kansas Board of Regents policy, and providing an academic history that aids in course selection decisions;

2. Scheduling appointments with advisors prior to enrollment and at other times as needed;

3. Identifying course choices from requirements of the preferred program or major;

4. Identifying questions to address;

5. Informing advisors of any special needs, deficiencies or barriers that might affect academic success;

6. Knowing academic policies and procedures, academic calendar deadlines, and degree or program requirements;

7. Remaining informed about progress in meeting academic requirements by maintaining careful academic records and seeking assistance to resolve any errors or questions; and

8. Following through on recommendations to seek assistance from the various student support services provided by the university.

Pre-Law Advising

Law schools across America select students from a wide variety of majors. As a result, there is no prescribed pre-law major or curriculum at K-State; rather, pre-law is an interest area for students considering attending law school. If a student is undecided, the pre-law advisor will help the student explore curriculum options with the goal of finding a major.

Pre-law students may select the major of their choice in any college. The Association of American Law Schools does not prescribe a particular pre-law curriculum; however, it does emphasize the selection of rigorous courses that will aid students in the development of critical and analytical thinking skills, a facility with written and spoken expression, an understanding of our society's institutions and values, and creative power in thinking. The development of these capacities is a highly individualized process to be pursued in consultation with the student's major advisor and the pre-law advisor.

Students in all majors who are considering attending law school should consult with the pre-law advisor in the College of Arts and Science dean's office as early as possible in their undergraduate career. Additional information about pre-law can be found on the College of Arts and Sciences homepage at *www-personal.ksu.edu/~jusnic/prelaw.html.*

Pre-Health Professions Advising

Some disciplines in the pre-health professions program require students to complete a bachelor's degree before applying to professional school. The bachelor's degree should be in a discipline that interests the student. No specific major is preferred by professional schools over another, and students may choose the major from any undergraduate college at Kansas State University.

Pre-health professions is not a major (students cannot earn a degree in pre-health professions). Students are encouraged to declare interest in their major as well as the pre-health program when they apply for admission.

The College of Arts and Sciences provides advising assistance for all students interested in any pre-health profession. At K-State, the pre-health areas of study currently include medical technology, pre-dentistry, pre-health information management, pre-medicine, pre-nursing, pre-occupational therapy, pre-optometry, pre-pharmacy, pre-physical therapy, and pre-respiratory therapy. Pre-veterinary medicine advising is available through the College of Agriculture and the College of Arts and Sciences.

Credit By Examination

Many opportunities exist at Kansas State University to earn college credit by examination. K-State participates in the College Level Examination Program (CLEP), Proficiency Examination Program (PEP), DANTES, high school International Baccalaureate, and the College Board High School Advanced Placement Testing Program. Local examinations (quiz outs) also are given in many course areas by individual departments within the university.

Details concerning testing opportunities are available on request from the Office of Admissions, Kansas State University, 119 Anderson Hall, Manhattan, Kansas 66506–0102, or Academic Assistance Center, Kansas State University, 101 Holton Hall, Manhattan, Kansas 66506–1307. Also see the catalog section on the Academic Assistance Center.

Credit By Departmental Examination

Students who are enrolled in K-State courses may petition a K-State department for permission to attempt to earn credit for a specific K-State course through a special departmental examination. Credit may be granted for any course with the consent of the head of the department offering credit for that subject. Permission is granted only if the student has prepared for the examination. The examination must be taken under the supervision of the head of the department in which the course is given. Credit earned by special examination is considered resident credit.

Credit by examination may receive letter grades or a notation "credit" as determined by the department. Check with your advisor to be certain a course will count to meet a requirement. The graded work will receive grade points to be computed in the student's GPA. Nongraded credit by examination will be treated as graded hours in implementing A/Pass/F policy.

Extension and Correspondence Credit

College-level credit earned through accredited extension divisions may be applied toward credit requirements for a degree at K-State. The credit must be applicable to the curriculum chosen and the amount of credit that can be used is limited. Contact the appropriate dean's office for further information.

Academic Fresh Start GPA

The Academic Fresh Start GPA enables a student returning to K-State for a baccalaureate degree after an absence of three or more years to neutralize, in part, the grade impact of prior academic performance. Academic Fresh Start provides for the computation of an alternative GPA and for the use of that GPA in most academic situations. A student may apply only once, and the process cannot be reversed.

Eligibility

Conditions for a readmitted student to be eligible to apply for Academic Fresh start are:

The student was not enrolled in a K-State course for three calendar years prior to readmission.

For the course work completed following readmission the student has earned a cumulative GPA of 2.5 or higher at the end of the academic session in which the twelfth credit was earned.

Calculation and evaluation

The calculation and reporting of the Academic Fresh Start cumulative GPA and its uses in academic evaluation are:

The beginning point for the Academic Fresh start cumulative GPA will be at the end of the first, second, third, or fourth regular academic semester following the student's initial K-State date of entry. The choice of starting point is designated by the student at the time of applying for Academic Fresh Start.

Academic Fresh Start deletes nothing from the student's academic record. Grades earned before the Academic Fresh Start will remain on the transcript along with the cumulative GPA for all hours taken. In addition, the transcript will clearly indicate the starting point of the Academic Fresh Start as well as the Academic Fresh Start cumulative GPA.

Universitywide academic policies are based on a cumulative GPA. In order for students in the Academic Fresh start program to be eligible for university academic honors, they must complete a minimum of 60 hours in residence, with at least 50 hours in graded courses after returning to K-State. Other academic policies will not be affected.

Enrollment

Donald E. Foster, University Registrar
118 Anderson Hall
785-532-6254

Enrollments for fall, spring, and summer semesters occur at specified times during the academic year. The specific times are outlined in the *Course Schedule*, a booklet published by the Registrar's Office. The *Course Schedule* is available at *http://www.ksu.edu/courses/* on the web.

Assignment to Courses

Each student is responsible for fulfilling all requirements of the curriculum in which he or she is enrolled. The student should consult with his or her advisors and be familiar with the *K-State Undergraduate Catalog*.

A catalog is given to each new student and copies are maintained for student use in the Office of Admissions, all deans' offices, Farrell Library, and all departmental offices. Catalogs may also be purchased at the K-State Student Union Bookstore.

No student is officially enrolled in courses or for private lessons in music or other subjects until a formal course assignment is completed.

A student may not enroll later than 10 class days after the beginning of a semester (five days for summer semester) except by permission of the dean. Students should enroll during regularly scheduled registration periods in order to avoid a late fee.

A student may not enroll for more than 18 K-State credit hours in a semester unless the student is granted permission to do so by the student's academic dean or the dean's representative. If the published curriculum of a college or department in which the student is enrolled requires that more than 18 K-State credit hours be taken during a semester, this 18-credit limit does not apply.

A student will be considered full-time for fall and spring semesters if she or he is enrolled in 12 or more semester hours and for summer if enrolled in at least 6 semester hours.

A student with documented disabilities may petition the university for a waiver of the full-time requirement to allow course loads that appropriately accommodate the disability. The petition must be made in a timely manner prior to the appropriate semester. A student must petition annually for continuation of the waiver.

Faculty and employees

Full-time faculty members and regular employees, with approval of their department heads or deans, may enroll in undergraduate or graduate work not to exceed 6 credit hours in fall and spring semesters or 3 credit hours during the summer semester.

Late enrollment

A student who seeks to enter the university later than 10 calendar days (five calendar days for a six-, seven-, or eight-week summer course) after the start of the semester is admitted only by special permission of the student's dean. A course that is less than six weeks is prorated. A special handling fee will be assessed; see the Fees section of this catalog.

Drop/Add

If a student wants to drop or add a course or if an instructor recommends a change, the student should confer with an advisor.

The instructor *may* drop a student from a course after the first week of classes if the student has neither attended any of the scheduled course meetings nor notified the instructor of his or her intent to take the course. For purposes of this procedure enrollment in and payment of tuition for a course do not constitute notification of intent to take a course.

No student may add a course after the first week of classes without the permission of the instructor.

The last day for dropping a course without a W being recorded is at the end of the 25th day of the semester. After the 10th week of the semester, courses may not be dropped. For courses less than 16 weeks, the drop dates are prorated.

A summer semester course of six-, seven-, or eight- weeks may be dropped without a W being recorded through the thirteenth day; after the fifth week a six-, seven-, or eight-week course may not be dropped. A course less than six weeks is prorated.

Curriculum Change

Students desiring to transfer from one college to another within the university should confer with both deans concerned.

Retake Policy

Students may retake courses in order to improve the grades. If a course is retaken, the original grade is noted as retaken and removed from the grade point average.

Retakes can be accomplished only by re-enrolling in and completing a K-State resident course. Courses originally taken on a letter grade basis may be retaken on an A/Pass/F basis if appropriate, or if originally taken on an A/Pass/F basis may be retaken on a letter grade basis. The retake grade will always be used in the grade point average computation regardless of whether it is higher or lower than the original grade.

Although there is no limit to the number of times a course may be retaken, a student may retake a course with subsequent removal of the prior grade from calculation of the grade point average only once for each course, and for a total of five courses during the student's academic career at K-State. Any grades obtained from retaking courses beyond these limitations will be used in calculating the grade point average. A retaken course will count only once toward meeting degree requirements. Courses retaken before fall 1986 will not be used in determining whether five courses have been retaken.

Any course retaken after completion of a bachelor's degree will not affect the credits or the GPA applied to that degree.

A/Pass/F Policy

Undergraduate students, except first-semester freshmen and students on academic warning, may enroll in certain courses for which they have the normal prerequisites under the A/Pass/F grading option. Under this option, students earning a grade of A in a course will have an A recorded on the transcript for that course; a grade of B, C, or D will be recorded as Pass; a Grade of F will be recorded as F.

Students may request the A/Pass/F grading option for eligible courses through the fourth week of a 16-week semester or through the second week of a six-, seven-, or eight-week summer session. Students requesting the use of the A/Pass/F option must obtain the signature of their advisors. The decision by a student to use the A/Pass/F option is treated with strict confidentiality.

It is the responsibility of a student requesting enrollment under the A/Pass/F grading option to be sure that such an enrollment is valid in the declared degree program. A course originally completed under the A/Pass/F grading option *may not* be converted at any time to a graded basis.

Students should be aware that some schools, scholarship committees, and honorary societies do not find work taken on a nongraded basis (Pass) acceptable. Furthermore, many employers do not view nongraded (Pass) course work favorably. All students should be cautious in using the A/Pass/F grading option.

Each department or division may specify which courses its majors may take under the A/Pass/F grading option consistent with the university requirements listed below.

1. A student may enroll under the A/Pass/F option for any free elective course offered under this option, that is, in any course that is in no way specified even in general terms in his or her curriculum. Courses that are specified by name or number and courses that meet general distribution requirements are not considered free electives.

2. A student may enroll under the A/Pass/F option for any general distribution requirement offered under this option, provided the course is in the upper division level (300 and above), for example, three courses in the humanities.

3. A student may not enroll under the A/Pass/F option in any course that is required by name or number as part of his or her program of study.

Students may submit Pass hours for graduation requirements up to and not exceeding one-sixth of the total number of hours required for a bachelor's degree. That is, five-sixths of all hours submitted for the degree must be hours submitted on a graded or credit basis.

Credit/No Credit Courses

Certain courses for which the learning experience is based primarily on participation and/or attendance may be offered solely on a Credit/No Credit basis. No grades are given for such courses.

For courses that are normally given for a grade, the designation Credit may be obtained in the case of credit by examination. (See the Academic Advising section of this catalog.)

Course Attendance

Attendance policies will be determined by the instructor of each course. Instructors will determine if, and the manner in which, work and exams missed may be made up.

Withdrawal From the University

A student who withdraws from the university must have an official withdrawal permit from the appropriate dean.

If a student withdraws during the first 25 days of a 16-week semester (first 13 days of a six-, seven-, or eight-week summer session), no mark will be recorded on the student's transcript. Thereafter, a mark of W is recorded; a course less than 16-weeks is prorated. The deadline for withdrawing is the end of the 10th week of the semester; for a course less than 16 weeks, the withdrawal date is prorated.

When a student withdraws from the university, student privileges, such as use of the Recreation Complex, stop.

If a student finds it necessary to withdraw from the university for verifiable nonacademic reasons after the 10th week, he or she should consult the appropriate dean's office.

Auditing Courses

Auditing is attending a course regularly, without participating in course work or receiving credit, and is permitted on a space-available basis. Permission to audit a course is granted by the instructor, with the approval of the dean of the college in which the course is offered. Laboratory, continuing education, and activity courses may not be audited. No record is made on the academic transcript. Students process the audit permission through Enrollment Services. Students 60 years or older may audit on a space-available, no-fee basis.

Prep Week

The week before the final examination period (known as prep week) is set aside as a period of curtailed social activity. No examinations, other than weekly laboratory quizzes, studio, or language proficiency examinations, may be given during the last five calendar days before final examinations.

Final Examinations

A final examination period during which no regular courses meet is scheduled at the end of the fall and spring semesters. Final examinations are given during this period. There is no specially scheduled period for final examinations in the summer semester.

Except for honors, problems, seminars, and language and fine arts performance courses, the last examination (last unit test or comprehensive test) in a course must be given during the examination period specified by the Committee on Academic Policies and is published in the *Course Schedule*. Courses may have take-home examinations, projects, papers (excluding semester papers), or other media, in lieu of written final examinations as the last evaluation instrument in the course. In such instances, a deadline for submittal of the medium may not be earlier than the time of the end of the course's scheduled examination period as published in the *Course Schedule*.

Tuition and Fees

Keith L. Ratzloff, University Controller

The following schedule of tuition and fees was in effect at the time this catalog was prepared. There is no guarantee this schedule will not be changed without notice before the beginning of any semester or summer term.

Students will be assessed for all hours in which they are enrolled, including those for which the grade of W is recorded. Students withdrawing from courses are eligible for refunds in accordance with the refund policy.

Students receiving scholarships or grants not processed through the K-State Office of Student Financial Assistance before registration will be required to pay the full amount of their tuition and fees from personal resources.

Payment of Tuition and Fees

Unless a deferment is granted, students must pay the total amount of their semester or summer term tuition and fees before the first day of classes and should use a check for exact amount, MasterCard, or VISA. For students' safety, cash and checks requiring change are discouraged. A special handling fee is assessed for students who register or pay their tuition and fees after the start of classes.

Deferments

If the student's eligibility to receive financial aid is verifiable, the director of student financial assistance may authorize the deferment of payment of tuition and fees in accordance with the Board of Regents Policy and Procedures Manual (Chapter 2, Section E). The student's obligation to pay regularly assessed tuition and fees is not reduced by an approval to defer payment.

1. Those students who have fulfilled the application requirements and whose awards have been made by the June packaging date, but whose aid has not been disbursed. Deferments may be granted only to the approved level of financial aid eligibility. The amount of tuition and fees over and above the anticipated financial aid award must be paid by the student.

2. Those students who have applied for financial aid, but have not met the scheduled application deadlines. Deferments will be limited only to the amount of anticipated aid eligibility. A payment of one-third down or an amount equal to the aid that has been received, whichever is greater, will be required.

3. Veterans receiving benefits. Full tuition deferment only. Will be required to pay campus privilege fees.

4. International students. Full tuition deferment only. Will be required to pay campus privilege fees.

Returned checks
Tuition and fee payment checks that are returned uncollectible by financial institutions will be subject to a $15 charge, in addition to all other fees.

Withholding student records
The university withholds students' academic records for nonpayment of tuition and fees, loans, and other appropriate charges and for nonreturn of university property.

Fee descriptions

Tuition
This fee is the student's contribution toward the costs of instruction and covers approximately 20 to 25 percent of the instructional costs.

Educational Opportunity Fund
This fee aids the academic achievement and progress of underrepresented K-State students.

Student health
For a description of the services provided by this fee, see the section on Lafene Health Center in this catalog.

K-State Student Union repair and replacement
This fee is used for repairs and replacements at the K-State Student Union.

Recreation Complex expansion fee
In 1991 a student referendum was passed allowing bonds to be issued to support the expansion of the Peters Recreation Complex. This bond issue is to be retired by the continuation of part of the previously assessed fee for the retirement of the original construction bond indebtedness.

Bramlage Coliseum repair and replacement fee
1992 student legislation provided for the continuation of a portion of the debt retirement fee previously assessed for the Bramlage Coliseum bonds following their retirement in May of 1993.

Library expansion fee
In 1991 a student referendum was passed providing for a $5 million commitment by Kansas State University students to partially fund the expansion of the library. This commitment is to provide a bond issue to be retired, in part, by a continuation of student debt service fees which were previously assessed for the retirement of Bramlage and Holton Hall bonds.

Activity
This fee is used for a range of student interests and activities.

K-State Student Union
This fee is used for the administration, support, and operation of the K-State Student Union.

Student publications
This fee supports the *Collegian* and *Royal Purple.*

Recreational Services
This fee supports the Chester E. Peters Recreation Complex (equipment, interior upkeep, supplies, etc.).

KSDB-FM
This fee supports the student radio station (equipment, means of service to operate the station, recent upgrade of power wattage, etc.).

Athletics
This fee supports intercollegiate athletics.

Fine arts
This fee supports fine arts programming (theater, dance, music, art, etc.).

Student publications equipment
This is a temporary fee to provide new equipment for student publications (*Collegian* and *Royal Purple*).

Office of Student Activities and Services
This fee was implemented to separate the administrative operating budget of the Student Governing Association and its entities from the Student Activity Fee, thus removing it from competition with general student groups within the same funding pool.

Union enhancement
This fee will enable the K-State Student Union to expand the building and enhance and improve infrastructure deficiencies. The finished product will create an environment that will serve the needs of its customers much more efficiently.

Programming fee
This fee allows the Union Program Council to select a broad variety of events and attract current national talents to the campus.

Schedule of Fees

The following schedule of fees was in effect at the time this catalog was prepared. There is no guarantee this schedule will not change without notice. A schedule of fees for Kansas State University at Salina follows this section.

Contracts and compensatory charge

This schedule does not limit the charges that may be collected under arrangements with other governmental or private agencies, except that such arrangements may not provide for lesser charges. Compensatory or other charges to more nearly cover the actual cost of instruction are specifically authorized.

Fall/spring semester (subject to change without notice)

	Resident	Non-resident
Tuition (based on course level)		
Undergraduate (per credit hour)	$ 65.50[c]	$ 275.65
Veterinary medicine (enrolled in 7 or more credit hours)	$2,329.60[e]	$8,196.25[e]

Campus privilege fee rates	
1st hour	$ 64.00
2nd thru 12th hour	$ 17.00 per hour
Maximum fee for 12 hours or more	$ 251.00 total

Campus privilege fee recipients:
Educational Opportunity Fund
Student health
K-State Student Union repair and replacement
Rec Complex expansion
Library expansion
Coliseum repair and replacement
Activity fee
K-State Student Union
Student Publications
Recreational Services
KSDB-FM
Athletics
Fine Arts
Student Publications equipment
Student Union enhancement
Student Union special program
OSAS

	Resident	Non-resident
Total undergraduate for student taking 15 credit hours	$1,233.50	$4,385.75
Total veterinary medicine for student enrolled in 12 or more credit hours	$2,580.60	$8,447.25

Summer semester (subject to change without notice)

		Resident	Non-resident
Tuition (based on course level)			
Undergraduate	per credit hour	$ 65.50[c]	$275.65
Veterinary medicine	per credit hour	$155.30[e]	$546.40[e]

Campus privilege fee rates	
1st hour	$ 30.00
2nd through 6th hour	$ 13.50 per hour
Maximum fee for 6 hours or more	$ 97.50 total

Auditing (subject to change without notice)

Auditing is permitted at no charge on a space-available basis. Auditing allows class attendance without participation or credit upon recommendation of the instructor and approval of the dean. This privilege is not applicable to laboratory and Division of Continuing Education courses.

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[a] Students enrolled in a spring semester but not attending summer school may use Lafene Health Center services during the summer by paying a $35 fee due prior to receiving services. Students who have paid their health fees may elect to have their spouses covered if they pay a spouse fee of $85 for a fall/spring semester, or $35 for a summer semester. Full-time K-State employees enrolled in classes will not be assessed a student health fee, but they may choose to pay the fee and therefore be eligible for Lafene Health Center services.

[b] Students who will be attending classes at off-campus locations that are more than 30-miles from Manhattan for an entire semester—and will reside outside of a 30-mile radius of the Manhattan campus during that semester—may elect to be exempted from all campus privilege fees.

[c] Employees (as defined in the Eligibility for Resident Tuition section) are assessed the resident tuition.

[d] Summer-term campus privilege fees are not applicable to students enrolled in formally organized classes actually conducted at off-campus locations.

[e] Students in the veterinary medicine senior class will be assessed three equal tuition payments based on 5 credit hours for the summer term and full-time tuition for the following fall and spring semesters. The tuition assessments will be equal, but the campus privilege fees assessments will be based on the applicable amounts for each enrollment period.

Off-campus courses (based on course level, subject to change without notice.)

Undergraduate credit	$88 per semester hour
No credit	Lowest advertised tuition rate per semester hour
Non-credit courses	Vary to correspond with total direct costs

Regents Center construction fee
Students enrolled in K-State courses offered in the KU Regents Center in Kansas City will be assessed a $10-per-credit-hour charge to defray costs of construction of this new facility.

Course charge
Additional charges may be made to correspond with the actual costs of equipment, media fees, testing, video/audio tapes, and other items that are an integral part of a course.

TELENET media fee
(For courses delivered via Kansas Regents Network)

1-credit-hour course	$25
2-credit-hour course	$30
3-credit-hour course	$35

On-campus fees administered through the Division of Continuing Education (subject to change without notice)

Credit tuition		**Resident**	**Non-resident**
Undergraduate	per credit hour	$ 78.00	$288.10
Veterinary medicine	per credit hour	167.00	559.00

Course charge
Additional charges may be made to correspond with the actual costs of equipment, media fees, testing, video/audio tapes, and other items that are an integral part of a course.

Non-credit tuition	Vary to correspond with total direct costs

Student fees (both credit and applicable non-credit courses)

Campus privilege fees	per day	$1.00*

*Not to exceed the maximum privilege fee assessed per semester.

Conferences, institutes, and seminars

Non-credit	Vary to correspond with total direct costs

Application for admission processing fees (not subject to refund)

Applications	
For first-time admission	$20.00
For international students	45.00
For admission to Non-traditional Study Program	25.00
Veterinary medicine applications	
Application for admission to first professional program in College of Veterinary Medicine	50.00

Engineering equipment fee (subject to change without notice)

For undergraduates enrolled in the College of Engineering:

Fall or spring semesters
$100 per student per semester if enrolled in 7 or more credit hours
$50 per student per semester if enrolled in 6 or fewer credit hours

Summer semester
$50 per student per summer semester if enrolled in 4 or more credit hours
$25 per student per summer semester if enrolled in 3 or fewer credit hours

Field camps (subject to change without notice)

Summer field camps in geology, archeology	Vary to correspond to direct costs.

Special handling fee for late registration or fee payment

Not subject to refund

On or after the
first day of classes $50

Exceptions: The $50 fee begins after the last regular evening registration if registering for evening courses only and after the starting date for late-starting courses. The special handling fee does not apply to corrections of fee assessments.

Study abroad program fee

Not subject to refund

Administrative fee per semester
for each student enrolled in a
study abroad program not taught
or conducted by K-State faculty $25

Additional fees

Copies of public documents
At cost

Laboratory courses
Cost of breakage

Parking misuse fees
As filed in the Board of Regents office

Interlibrary loan and other charge
As appropriate when authorized

Library misuse fees
As appropriate when authorized

Loans and related interest and charges
As appropriate when authorized

Rental and use fees for recreational equipment
As appropriate when authorized

Returned check fee
$15 per check

ROTC property
As appropriate when authorized

Student health services
As appropriate when authorized

Transcript fee
$5 per transcript

Student identification card replacement
$15 per each

Graduation fee
$15

Students are required to reimburse the institution for the cost of excess breakage and wastage of materials, and materials used in excess of those required for completion of course work.

American Institute of Baking students

Students enrolled in a regular semester at the American Institute of Baking will be considered adjunct students by paying the maximum campus privilege fees as indicated previously. These students will be entitled to use the Lafene Health Center, K-State Student Union, and Recreational Center, and to purchase tickets for athletic and cultural events at student prices.

Other expenses

In addition to the applicable fees, students are required to purchase textbooks, drawing instruments, and other personal equipment and supplies when needed for courses in the curriculum chosen. Costs will vary each semester, but are estimated to approximate the following:

Enrollment fees for an undergraduate Kansas resident—Manhattan campus 14 hours	$1,204
Books and supplies, approximately	351
Room and board in university housing (20-meal plan)	1,890
Clothing, laundry, postage, travel, extra meals, phone, social activities (varies with the individual)	1,312
Total estimated expenses (half of academic year)	**$4,757**

Schedule of Fees for K-State at Salina

The following schedule of fees was in effect when this catalog was prepared. All rates are subject to change without notice.

Contracts and compensatory charges

This schedule does not limit the charges that may be collected under arrangements with other governmental or private agencies, except that such arrangements may not provide for lesser charges. Compensatory or other charges to more nearly cover the actual cost of instruction are specifically authorized.

Fall/spring semester (subject to change without notice)

	Resident	Non-resident
Tuition (based on student classification)		
Undergraduate (per credit hour)	$ 57.40	$222.40
Campus privilege fees		
1st hour through 11 hours	5.85[a]	5.85[a]
Maximum for 12 or more hours	70.20[a]	70.20[a]

Summer semester (subject to change without notice)

	Resident	Non-resident
Tuition		
Undergraduate (per credit hour)	$57.40	$222.40
Campus privilege fees		
1st hour through 6 hours	5.85[a]	5.85[a]
Maximum for 6 or more hours	35.10[a]	35.10[a]

[a] Credit courses, workshops, and seminars may be exempt from this fee.

Flight training lab fees per hour (subject to change without notice)

	Solo/ hour	Dual/ hour
Aircraft		
Cessna 150/152	$ 38.00	$ 63.00
Cessna 172	52.00	77.00
PA-28	52.00	77.00
Beechcraft 23/24	55.00	80.00
Beechcraft 24R (Sierra)	80.00	105.00
Cessna 310/BE-55 Baron	150.00	175.00
B-33A Bonanza	120.00	145.00
B-58 Baron	220.00	245.00
BE-65 Queen Air	220.00	245.00
BE-90 King Air	450.00	500.00
Huey 269A (helicopter)	150.00	175.00
Huey (helicopter)	200.00	220.00
Bell Jet Ranger (helicopter)	300.00	320.00
Huey 500 (helicopter)	200.00	220.00
Citabria (or equivalent)	70.00	90.00
AeroCommander	200.00	220.00
Frasca 141 (flight simulator)	20.00	45.00
AST 300 simulator	30.00	55.00
AST 300T simulator	40.00	65.00
Ground time		
One-on-one instruction	per hour	25.00

Other fees

International student matriculation (non-refundable)	25.00
Off-campus credit courses	
Workshops, conferences, and seminars; when announced (per credit hour)	72.00
A & P program only (per credit hour)	72.00
Deferred payment processing (non-refundable)	15.00

Additional fees

Transcript fee	$ 5.00

Library misuse fees
As appropriate when authorized

Students are required to reimburse K-State at Salina for cost of: excess breakage and waste of materials and materials used in excess of those required for course work.

People Eligible for Resident Tuition

1. Residents

Guidelines for the determination of residency for tuition purposes are set forth in Appendix D, Residency Rules and Regulations, of the *Policy and Procedures Manual* for the Kansas Board of Regents along with referenced Kansas Statutes and Administrative Regulations.

2. Employees

a. Employees for universities under the Kansas Board of Regents, other than hourly student employees, working four-tenths time or more as follows:

For fall semesters: Employed September 1 through November 17.

For spring semesters: Employed February 1 through April 17.

For summer semesters: Employed the duration or employed from February 1 through April 17.

Exceptions to the above requirements can be made for the semester in which a graduate degree is awarded.

b. Employees of the federal government given adjunct appointments at Kansas State University or assigned to one of the ROTC units at K-State.

3. Military

a. Military personnel stationed and living in Kansas except military personnel assigned to K-State as full-time students.

b. People who are domiciliary residents of the state, who were in active military service prior to becoming domiciliary residents of the state, who were present in the state for a period of not less than two years during their tenure in active military service, whose domiciliary residence was established in the state within 30 days of discharge or retirement from active military service under honorable conditions, but whose domiciliary residence was not established in time to meet the residence duration requirement.

4. Dependents

Spouses and dependent children of full-time employees and military personnel defined above.

5. Exchange students from Missouri

Students eligible to pay resident fees at the University of Missouri who are enrolled in the following programs at Kansas State University: bachelor of architecture; B.S. in architectural engineering; B.S. in bakery science and management; B.S. in construction science (not available for new and readmitted students); B.S. in feed science and management; B.S. in horticultural therapy; bachelor of interior architecture; bachelor of landscape architecture; B.S. in milling science and management; M.S. and Ph.D. in grain science and industry.

This privilege is granted in exchange for resident tuition for Kansas students who enroll in certain programs in Missouri. (Subject to limitation arbitrated by Kansas Board of Regents and Missouri Board of Education.)

6. Kansas high school graduates

Persons who are not domiciliary residents of Kansas, who have graduated from a high school accredited by the State Board of Education within six months of enrollment, who were domiciliary residents of Kansas at the time of graduation from high school or within 12 months prior to graduation from high school, and who are entitled to admission at a state educational institution pursuant to K.S.A. 72-116 and its amendments.

7. Recruited/transferred employees

People who have been recruited to full-time employment in Kansas or transferred to a Kansas location within the last 12 months and their dependents. Self-employed persons are not eligible for this resident tuition status.

Refund Policy

This policy is subject to change without notice. The following table applies to students who completely withdraw from a semester or field camp and to the reduction, if any, in tuition and fees for students who reduce their enrollment. Refund percentages will not apply if enrollment is reduced then later increased to the same number of credit hours and level of courses (grad or undergrad) during the same refund percentage period. Refunds will not be made until sufficient time has lapsed to ensure that fee payment checks have been honored by the bank—usually 15 days after student pays.

On-campus students

Regular semesters:
- 100% through first full calendar week.
- 90% refund through second full calendar week.
- 50% refund through third and fourth full calendar weeks.
- No refund after fourth calendar week.

Summer semester:
- 100% refund through first Friday of classes.
- 50% refund through second Friday of classes.
- No refund after second Friday of classes.

Courses less than eight weeks:
- Refunds will be prorated accordingly.

Military

Students serving in the National Guard or reserves who are called to active duty during an academic semester are entitled to receive a full refund of tuition and fees. Students who are drafted and must report for active duty during an academic semester are entitled to receive a full refund of tuition and fees. All refunds are subject to presentation of official military documentation. Students who volunteer for military service will be subject to the university's non-military refund policy. Room and board charges will be prorated to the extent that services have been provided.

Continuing education refunds

This policy is subject to change without notice.

Extension credit courses

- 100% refund if requested prior to second course meeting or if the course is canceled.
- 50% refund if requested after the second class meeting.
- No refund if requested after one-third of the scheduled class meetings.
- Extension course fees are not transferable.

Non-credit courses

Fees are non-refundable unless, subsequent to acceptance of the fees, the service, at the option of the university, is not provided.

Conferences and non-credit programs

Refund policies will be published in the registration brochure, and refunds for cancellation of registration will be determined in relation to the actual share of the participant cost in effect at the time of the cancellation request.

Degrees

List of Degrees

The letter in parentheses refers to the recommended mathematics background for each degree. See the Math Requirements for Degrees section immediately following.

College of Agriculture

Bachelor of science in agriculture

- (E) Agribusiness (B.S. in agribusiness)
- (E) Agricultural economics
- (E) Agricultural education
- (E) Agricultural journalism
- (E) Agricultural technology management
- (E) Agronomy (crops and soils)
- (E) Animal sciences and industry
- (E) Bakery science and management (B.S. in bakery science and management)
- (E) Feed science and management (B.S. in feed science and management)
- (E) Food science and industry (B.S. in food science and industry)
- (E) Horticulture
- (E) Horticultural therapy
- (E) Milling science and management (B.S. in milling science and management)
- (E) Recreation and park administration
- (E) Park resource management
- (E) Pre-veterinary medicine (nondegree)

College of Architecture, Planning, and Design

- (F) Architecture—five years (bachelor of architecture)
- (F) Interior architecture—five years (bachelor of interior architecture)
- (F) Landscape architecture—five years (bachelor of landscape architecture)

College of Arts and Sciences

Bachelor of arts, bachelor of fine arts, bachelor of music, bachelor of music education, and bachelor of science

- (B) Anthropology, B.A. or B.S.
- (A) Art, B.A. or B.F.A.
- (E) Biochemistry, B.A. or B.S.
- (E) Biology, B.A. or B.S.
- (E) Chemistry, B.A. or B.S.
  - General chemistry
  - Chemical science
- (B) Economics, B.A. or B.S.
- (A) English, B.A.
- (E) Fisheries and wildlife biology, B.A. or B.S.
- (B) Geography, B.A. or B.S.
- (E) Geology, B.A. or B.S.
- (A) History, B.A. or B.S.
- (E) Kinesiology, B.A. or B.S.
- (B) Mass communications, B.A. or B.S.
- (F) Mathematics, B.A. or B.
- (E) Medical technology, B.A. or B.S.
- (E) Microbiology, B.A. or B.S.
- (A) Modern languages, B.A.
- (A) Music
  - Music, B.A.
  - Applied music, B.M.
  - Music education, B.M.E.
- (A) Philosophy, B.A. or B.S.
- (E) Physics, B.A. or B.S.
- (B) Political science, B.A. or B.S.
- (E) Pre-dentistry, B.A. or B.S.
- (E) Pre-law (nondegree)
- (E) Pre-health information management (nondegree)
- (E) Pre-medicine, B.A. or B.S.
- (E) Pre-nursing (nondegree)
- (E) Pre-occupational therapy (nondegree)
- (E) Pre-optometry (nondegree)
- (E) Pre-pharmacy (nondegree)
- (E) Pre-physical therapy (nondegree)
- (E) Pre-respiratory therapy (nondegree)
- (E) Pre-veterinary medicine (nondegree)
- (E) Psychology, B.A. or B.S.
- (E) Social work, B.A. or B.S.
- (E) Sociology, B.A. or B.S.
- (A) Speech, B.A. or B.S.
- (A) Statistics, B.A. or B.S.
- (A) Theatre, B.A. or B.S.

Interdisciplinary studies

- (A) Humanities, B.A.
- (D) Life science, B.A. or B.S.
- (E) Physical science, B.A. or B.S.
- (A) Social science, B.A. or B.S.

College of Business Administration

Bachelor of science in business administration

- (E) Accounting
- (E) Finance
- (E) Management
- (E) Marketing and international business

College of Education

- (A) Elementary education (bachelor of science in elementary education)

Secondary education (bachelor of science)

- (A) Education—Art
- (E) Education—Biological science
- (B) Education—Business
- (E) Education—Chemistry
- (E) Education—Earth science
- (B) Education—Economics
- (A) Education—English
- (A) Education—English and journalism
- (A) Education—Geography
- (A) Education—History
- (A) Education—Journalism
- (F) Education—Mathematics
- (A) Education—Modern languages
- (E) Education—Physical science
- (E) Education—Physics
- (B) Education—Political science
- (B) Education—Sociology
- (A) Education—Speech

College of Engineering

- (F) Architectural engineering (B.S. in architectural engineering)
- (F) Chemical engineering (B.S. in chemical engineering)
- (F) Civil engineering (B.S. in civil engineering)
- (F) Computer engineering (B.S. in computer engineering)
- (F) Computer science (B.S. in computer science)
- (D) Information systems (B.S. in information systems)
- (F) Construction science and management (B.S. in construction science and management)
- (F) Electrical engineering (B.S. in electrical engineering)
- (F) Industrial engineering (B.S. in industrial engineering)
- (F) Mechanical engineering (B.S. in mechanical engineering)
  - Nuclear engineering option
- (F) Biological and agricultural engineering (B.S. in biological and agricultural engineering)
- (F) Manufacturing systems engineering (B.S. in manufacturing systems engineering)

College of Human Ecology

B.S. in clothing and textiles

- (C) Apparel marketing and design
  - Apparel design and production
  - Apparel marketing
- (C or F) Textiles

B.S. in dietetics

- (C) Dietetics

B.S. in foods and nutrition

- (C or F) Food science
- (F) Nutritional sciences (pre-medical)
- (C or F) Nutrition and exercise sciences
- (C) Public health nutrition

B.S. in hotel and restaurant management

- (C) Hotel and restaurant management

B.S. in family studies and human services

- (C) Communication sciences and disorders
- (C) Early childhood education
- (C) Family studies and human services
  - Family and consumer economics
  - Family life and community services
  - Life span human development
  - Family studies and human services and social work

B.S. in human ecology

- (C) General human ecology
  - Family and consumer sciences education teacher certification

B.S. in human ecology and mass communications
(C) Human ecology and mass communications

B.S. in interior design
(C) Interior design

College of Technology and Aviation

Associate of applied science
(E) Aviation maintenance
(E) Avionics technology

Associate of technology
(E) Aviation maintenance
(F) Civil engineering technology
(F) Computer engineering technology
(B) Computer information systems
(E) Computer science technology
(F) Electronic engineering technology
(F) Industrial engineering technology
(F) Mechanical engineering technology
(E) Professional pilot
(F) Surveying technology
(F) Environmental engineering technology

Aviation maintenance certificate
(B) Aviation maintenance

Bachelor of science in aeronautical technology
(F) Airway science

Bachelor of science in electronic engineering technology
(F) Electronic engineering technology

Bachelor of science in land information technology
(F) Land information technology

Bachelor of science in mechanical engineering technology
(F) Mechanical engineering technology

Bachelor of science in technology management
(F) Technology management

College of Veterinary Medicine

Veterinary medicine (doctor of veterinary medicine)
(See Colleges of Agriculture and Arts and Sciences for B.S. degrees in connection with College of Veterinary Medicine.)

Math Requirements for Degrees

The degrees shown earlier in this section are conferred on completion of the prescribed curricula. The letter that precedes each curriculum indicates the suggested high school math courses that students should have completed in high school.

(A) One unit of algebra, or one unit of geometry, or a unit involving the combination of these, or approved substitute
(B) One unit of algebra
(C) Two units of algebra
(D) One unit of algebra and one unit of geometry
(E) One and one-half units of algebra and one unit of geometry
(F) Two units of algebra, one unit of geometry, and one-half unit of trigonometry

Common Degree Requirements

The common requirements for all curricula leading to an undergraduate degree are:
- Expository Writing, 6 credits
- Public Speaking, 2 credits

Degree Requirements

To graduate, a student must complete a prescribed curriculum. Under special conditions substitutions are allowed as the interests of the student warrant. The total credit requirement for bachelor's degrees ranges from 120 to 167 hours, according to the curriculum taken.

There are two grade point averages a student must meet to be awarded a degree: (1) at least 2.0 on K-State resident graded courses that are applied to the degree, and (2) at least a 2.0 cumulative GPA for all resident graded courses taken at K-State. Professional curricula may impose additional degree requirements.

Students must file an application for graduation clearance in the appropriate dean's office during the first four weeks of the semester (first two weeks for summer term) in which the degree is to be completed.

It is the student's responsibility to be certain that transcripts from all transfer institutions are on file in the Registrar's Office before the end of the semester or summer term the degree requirements will be completed.

Up to half of the credits required for a normal four-year degree may be completed at an accredited two-year college.

Each student must complete at least 30 resident credits to be considered for a degree. Further, the student must complete 20 of the last 30 hours of resident credit at K-State. Courses in the student's major field shall be taken in residence unless an exception is granted by the major department on petition of the student. That department shall have jurisdiction over the acceptance of major courses by transfer for fulfillment of the major requirement.

Exceptions to the residence requirement of the final year may be made by the dean of the college and the department head in the student's major field, if the student has completed a total of three years of work acceptable to K-State. The student must submit satisfactory plans and reasons for completing the degree requirements at another institution, such as a dental, medical, law, or medical technology school, before earning a degree here.

Resident work includes all regularly scheduled course or laboratory instruction given by the regular university faculty.

At least five-sixths of the credit hours taken at K-State and applied toward a degree must be graded hours. Required courses of an internship or practicum nature or credit by examination, offered on a Credit/No Credit basis only, are to be considered as graded hours in implementing the five-sixths policy.

Candidates for spring graduation should attend commencement. Fall graduates are asked to participate in the commencement exercises in December or the following spring. Prospective summer graduates may participate in the exercises before or after graduation.

Students generally complete degree requirements in the normal four or five academic years allotted for that purpose. However, it could take additional time because of a significant change of educational objective. A student may interrupt studies for one or more semesters. Normally, the student will be expected to complete the degree program in not more than two years beyond the scheduled time. The individual whose education has been interrupted may have to meet new degree requirements if a change has occurred.

Dual degrees

Students may elect to earn two degrees at the same time. The requirements for both must be satisfied. Students should confer with each academic dean as early as possible to determine appropriate programs of study.

Students who are eligible to graduate with two degrees must file an application for graduation for each degree in the academic dean's offices during the first four weeks of the semester they plan to complete degree requirements. Summer graduates must file their applications for graduation during the first two weeks of the summer term.

Minors and Secondary Majors

Minor requirements

Undergraduate minors provide students an opportunity to emphasize study in an area outside their major curriculum. Because expertise in areas related to a major may be beneficial, students are encouraged to consider broadening their course of study through pursuit of a minor. Students completing all requirements for a minor will receive official recognition for their emphasis on their permanent records.

A minor requires completion of at least 15 designated hours of course work. Faculty in departments offering minors have specified courses that enable students to acquire moderate expertise in their discipline. Courses forming a minor may be used to satisfy the general requirements of a major curriculum, including free electives.

Declaration of a minor is optional. Students are not required to complete a minor to graduate.

Students interested in completing one or more minors should consult their advisor. Additional counsel should be sought from the minor program director. Students are encouraged to seek advice and information about potential areas of emphasis early in their academic planning.

For more information on specific minors, consult individual department course listings.

College of Agriculture

Agribusiness
Agricultural economics
Agronomy
Agricultural technology management
Animal sciences and industry
Bakery science and management
Cereal chemistry
Entomology
Feed science and management
Food science
Horticulture
Plant pathology

College of Arts and Sciences

American ethnic studies
Anthropology
Biology
Chemistry
Dance
Economics
English
Geology
History
Military leadership
Modern languages (French, German, Japanese, Russian, or Spanish)
Music
Philosophy
Political science
Rhetoric/communication
Theatre
Women's studies

College of Business Administration

Business

College of Engineering

Computer science
Computing and information sciences
Digital systems
Engineering management
Ergonomics and safety
Manufacturing systems
Operations research

College of Human Ecology

Clothing and textiles
Communication sciences and disorders

Secondary majors

See the Secondary Majors section of this catalog for information on these programs:

American ethnic studies
Gerontology
Industrial and labor relations
Latin American studies
Natural resources and environmental sciences
Women's studies

University General Education Requirements

Objective

The university general education program strives to add breadth to the educational experience. It helps students widen their perspectives, explore the relationships between various subjects, and develop critical and analytical thinking skills.

The university general education courses are not designed to be taken in a single block at the beginning or ending of a student's college career. They should be continuous and spread across the entire college career.

Any student whose acquired credit at Kansas State University or any other institution began in fall 1997 or later will be obligated to meet university general education requirements. Transfer students need to contact their departmental advisors and see the Transfer Admission section of this catalog.

Overview of requirements

Students must complete at least 18 hours of approved university general education courses, one-third of which must be at the 300-level or above.

The courses accepted for university general education credit will vary according to college and major. All students should consult with their advisors to determine which university general education courses meet the requirements of their degree programs.

For more information

- Consult your advisor.
- Check each semester's *Course Schedule* for a listing of university general education courses. The *Course Schedule* is available at *http://www.ksu.edu/courses/* on the web.
- More information about the university general education program is available at *http://www.ksu.edu/educadv/.*

Approved courses

The following university general education courses were approved when the catalog was printed, but this list is subject to change.

In course descriptions, university general education courses are marked with a ◆. The Degrees section at the front of this catalog lists other university general education courses. A list of currently offered university general education courses is available on the web at these addresses:

- http://www.ksu.edu/course/
- http://www.ksu.edu/educadv/

College of Agriculture

Agricultural economics

AGEC 120	Principles of Agricultural Economics and Agribusiness
AGEC 420	Commodity Futures Marketing
AGEC 525	Natural Resources and Environmental Economics
AGEC 610	Current Agriculture and Natural Resource Policy Issues

Agronomy

AGRON 335	Environmental Quality

Animal sciences and industry

ASI 303	History and Attitudes of Animal Use

Entomology

ENTOM 250	Insects and People

Horticulture, forestry, and recreation resources

FOR 375	Introduction to Natural Resource Management
HORT 210	Concepts of Floral Design
HORT 256	Human Dimensions of Horticulture

General agriculture

GENAG 582	Natural Resources and Environmental Sciences Project

Plant pathology

PLPTH 300	Microbes, Plants, and the Human Perspective

College of Architecture, Planning, and Design

Architecture

ARCH 240	Science, Technology, and Architecture
ARCH 290	Architecture Through the Ages
ARCH 301	Appreciation of Architecture
ARCH 670	History of American Architecture and Allied Design I
ARCH 671	History of American Architecture and Allied Design II
ARCH 740	Building Related Health and Safety

Landscape architecture

LAR 322	Environmental Issues and Ethics
LAR 720	Public Lands and Natural Resources Laws

College of Arts and Sciences

American ethnic studies

AMETH 160	Introduction to American Ethnic Studies

Art

ART 100	Design I
ART 190	Drawing I
ART 195	Survey of Art History I
ART 196	Survey of Art History II
ART 399	Honors Seminar in Art
ART 560	Art for the Exceptional Individual

Biochemistry

BIOCH 110	Biochemistry and Society
BIOCH 265	Introduction to Organic and Biochemistry
BIOCH 399	Honors Seminar in Biochemistry

Biology

BIOL 198	Principles of Biology
BIOL 330	Public Health Biology
BIOL 399	Honors Seminar in Biology
BIOL 402	Eugenics

Chemistry

CHM 110	General Chemistry
CHM 210	Chemistry I
CHM 215	Environmental Science: A Chemistry Perspective
CHM 230	Chemistry II
CHM 399	Honors Seminar in Chemistry
CHM 650	History of Chemistry

General arts and sciences

DAS 100	Freshman Seminar
DAS 450	Honors Colloquium
DAS 582	Natural Resources and Environmental Sciences Project

Economics

ECON 110	Principles of Macroeconomics
ECON 111	Principles of Microeconomics—Honors
ECON 120	Principles of Microeconomics
ECON 399	Honors Seminar in Economics
ECON 507	The Japanese Economy
ECON 523	Human Resource Economics
ECON 527	Environmental Economics
ECON 555	Urban and Regional Economics
ECON 536	Comparative Economics

English

ENGL 261	British Literature: Medieval and Renaissance
ENGL 262	British Literature: Enlightenment to Modern
ENGL 271	American Literature: Colonial Through Romantic
ENGL 272	American Literature: Realists and Moderns
ENGL 287	Great Books
ENGL 297	Honors Introduction to the Humanities I
ENGL 298	Honors Introduction to the Humanities II
ENGL 390	Fable and Fantasy
ENGL 399	Honors Seminar in English
ENGL 420	Literature and Film
ENGL 450	Literature and Society
ENGL 580	Selected World Literature

Geography

GEOG 100	World Regional Geography
GEOG 200	Human Geography
GEOG 220	Environmental Geography I
GEOG 221	Environmental Geography II
GEOG 300	Geography of Tourism
GEOG 310	Geography of Kansas
GEOG 399	Honors Seminar in Geography
GEOG 440	Geography of Natural Resources
GEOG 500	Geography of the United States
GEOG 535	Fundamentals of Climatology

Geology

GEOL 100	Earth in Action
GEOL 102	Earth Through Time
GEOL 103	Geology Laboratory
GEOL 105	Oceanography
GEOL 115	Environmental Geology
GEOL 125	Natural Disasters
GEOL 300	Historical Geology
GEOL 399	Honors Seminar in Geology
GEOL 506	Geology and Environment
GEOL 540	Ice Ages and Environmental Change

History

HIST 231	History and Technology
HIST 297	Honors Introduction to the Humanities I
HIST 298	Honors Introduction to the Humanities II
HIST 399	Honors Seminar in History
HIST 520	Death and Dying in History
HIST 523	France 1400 to 1750
HIST 529	Civil War and Reconstruction
HIST 534	Social History of Medicine
HIST 536	American West
HIST 537	History of Indians of North America
HIST 570	Europe in the Seventeenth Century
HIST 583	History of France, 1400–1715
HIST 584	France Since 1715

Kinesiology

KIN 220	Behavioral Bases of Exercises
KIN 399	Honors Seminar in Kinesiology

Mathematics

MATH 160	Introduction to Contemporary Math
MATH 399	Honors Seminar in Math

Journalism and mass communications

MC 235	Mass Communication in Society
MC 399	Honors Seminar in Mass Communications

Modern languages

FREN 503	Black African Francophone in Translation
FREN 511	Masterpieces of French Literature I
FREN 512	Masterpieces of French Literature II
FREN 514	French Civilization
FREN 516	Readings in French
FREN 517	Commercial French
MLANG 297	Honors Introduction to the Humanities I
MLANG 298	Honors Introduction to the Humanities II
MLANG 399	Honors Seminar in Modern Languages
SPAN 161	Spanish I
SPAN 162	Spanish II
SPAN 261	Spanish III
SPAN 263	Spanish IV

Military science

MSCI 201	Self/Team Development
MSCI 202	Individual/Team Military Tactics

Music

MUSIC 100	Music Fundamentals
MUSIC 160	Music Listening Lab
MUSIC 245	Introduction to American Music
MUSIC 250	Introduction to Music
MUSIC 310	History of Musical Instruments
MUSIC 399	Honors Seminar in Music
MUSIC 420	History of Jazz
MUSIC 424	Jazz in Kansas City and the Southwest

Philosophy

PHILO 125	Introduction to the Philosophy of Science
PHILO 135	Introduction to Social and Political Philosophy
PHILO 140	Introduction to the Philosophy of Mind
PHILO 145	Introduction to Philosophical Classics
PHILO 175	Philosophical Composition
PHILO 297	Honors Introduction to the Humanities I
PHILO 298	Honors Introduction to the Humanities II
PHILO 365	Medical Ethics
PHILO 390	Business Ethics
PHILO 399	Honors Seminar in Philosophy

Physics

PHYS 101	The Physical World I
PHYS 106	Concepts Of Physics
PHYS 399	Honors Seminar In Physics

Political science

POLSC 301	Introduction to Political Thought
POLSC 325	United States Politics
POLSC 333	World Politics
POLSC 344	Introduction to Comparative Politics
POLSC 399	Honors Seminar in Political Science

Psychology

PSYCH 110	General Psychology
PSYCH 202	Drugs and Behavior
PSYCH 280	Childhood and Adolescence
PSYCH 399	Honors Seminar in Psychology

Sociology, anthropology, and social work

ANTH 204	Introduction to Cultural Anthropology
ANTH 399	Honors Seminar in Anthropology
SOCIO 399	Honors Seminar in Sociology
SOCIO 533	Rural Society
SOCIO 665	Women and Crime
SOCWK 580	Women's Perspective on Peace and War

Speech communication, theatre, and dance

SPCH 311	Business and Professional Speaking
SPCH 321	Public Speaking II
SPCH 325	Argumentation and Debate
SPCH 326	Small Group Discussion Methods
SPCH 399	Honors Seminar in Speech
SPCH 526	Persuasion
THTRE 261	Fundamentals of Acting
THTRE 270	Introduction to Theater

Statistics

STAT 100	Statistical Literacy in the Age of Information
STAT 320	Elements of Statistics
STAT 330	Elementary Statistics of the Social Sciences
STAT 340	Biometrics
STAT 350	Business and Economic Statistics
STAT 399	Honors Seminar in Statistics

College of Business Administration

Accounting

ACCT 231	Accounting for Business Operations
ACCT 241	Accounting for Investing and Finances

Finance

FINAN 250	Personal Investing and Risk Management

Management

MANGT 300	Introduction to Total Quality Management

Marketing and international business

MKTIB 400	Marketing

College of Education

Special education

EDSP 400	The Culture of Childhood
EDSP 500	Introduction to Human Exceptionality

College of Engineering

Computing and information sciences

CIS 411	Global Information Systems

General engineering

DEN 210	History of Building and Construction
DEN 582	Natural Resources and Environmental Sciences Project

College of Human Ecology

Family studies and human services

FSHS 110	Introduction to Human Development
FSHS 350	Family Relationships and Gender Roles
FSHS 506	Middle Childhood and Adolescence
FSHS 670	Working with Parents

Foods and nutrition

FN 132	Basic Nutrition

General human ecology

GNHE 310	Human Needs

Clothing, textiles, and interior design

IDH 600	International Studies: British Cultural Survey

College of Veterinary Medicine

Clinical sciences

CS 300	The Horse in American Culture

College of Technology and Aviation

Arts, sciences, and business

BUS 251	Financial Accounting
BUS 252	Managerial Accounting
HIST 231	History and Technology

Grades

The university uses the following grades:

A, for excellent work
B, for good work
C, for fair work
D, for poor work
F, for failure
I, for incomplete
P, for grades of B, C, or D in courses taken under the A/Pass/F grading option
Cr, for credit in courses for which no letter grade is given (nongraded courses)
NC, for no credit in courses for which no letter grade is given (nongraded courses)
NR, for no grade reported
W, for withdrawn

The grade of Incomplete (I) is given in regular courses (other than independent studies, research, and problems) upon request of the student for personal emergencies that are verifiable. The faculty member has the responsibility to provide written notification to the student of work required to remove the incomplete. The student has the responsibility to take the initiative in completing the work, and is expected to make up the incomplete during the first semester in residence at the university after receiving the grade of I. If the student does not make up the incomplete during the first semester in residence at the university after receiving it, a grade may be given by the faculty member without further consultation with the student.

If after the end of the first semester the I remains on the record it will be designated as F for record-keeping purposes and will be computed in the student's GPA, weighted at 0 points per credit. A grade of NR will be treated in a like manner using the designation F.

Courses in which a Cr or P grade is received will be used in fulfilling graduation requirements. Only the grades A, B, C, D, and F are used in calculating resident grade averages.

Report of Grades

Academic progress reports for new freshmen are mailed to students and deans' offices at the close of the fifth week of courses of the fall or spring semester.

The instructor reports final semester grades, based on examinations and course work, to the Registrar's Office.

In case of absence from the final examination, the instructor reports a mark of I for incomplete or computes the grade on the basis of zero for the final examination. If an Incomplete is reported, a reasonable time, usually not over one month, is allowed in which to take the examination.

Points

For each semester hour of graded work, students earn points, as follows:

A = 4.0
B = 3.0
C = 2.0
D = 1.0
F = 0

Scholastic Deficiencies

Students are notified of their scholastic status by the appropriate academic deans from information supplied by the Registrar's Office. The scholastic record of each undergraduate is evaluated twice yearly, at the end of the fall semester and at the end of the spring semester. The student's scholastic status does not change as a result of work taken in summer semester or intersession.

Students (excluding students in the College of Veterinary Medicine) are placed on academic warning or dismissal according to the following policy.

Students who earn less than a 1.0 GPA in a given semester

Students who earn less than a 1.0 GPA in any semester are considered to have neglected their academic responsibilities. The following policy applies:

1. Any student (freshman or transfer) who earns less than a 1.0 semester GPA in his or her first semester at K-State will be dismissed.

2. Any continuing student enrolled at K-State not dismissed by university academic standards policies but who earns less than a 1.0 semester GPA will have registration for the next semester withheld subject to review by the academic dean or the dean's representative(s).

Academic warning

1. Students who earn less than a 2.000 K-State semester or cumulative GPA will be placed on academic warning.

2. Students will be automatically taken off academic warning when the cumulative K-State GPA reaches 2.000 in spring or fall end-of-semester grade posting.

Academic dismissal

1. Credit hours used to determine the appropriate threshold will include transfer hours accepted, all K-State graded hours, and miscellaneous hours completed.

2. Credit hours used in calculating semester and cumulative grade point averages will include only K-State graded hours. Grades for courses accepted in transfer from another institution will not be used in the grade point average calculation.

3. Students with a K-State cumulative GPA of 1.0 or greater will not be dismissed until they have accumulated at least 20 semester credit hours as defined in item 1. (Exception: A student who earns less than a 1.0 semester GPA in his or her first semester at K-State will be dismissed.)

4. Students must be on academic warning the semester prior to dismissal. (Exception: A student who earns less than a 1.0 semester GPA in his or her first semester at K-State will be dismissed.)

5. Students will be academically dismissed if their K-State cumulative GPA is below the following threshold values:

*Total hours accumulated**	*K-State GPA*
20–29	1.50
30–45	1.75
46–60	1.80
61–75	1.85
76–90	1.90
91–105	1.95
greater than 105	2.00

*Defined in item 1 above

6. Students who earn a K-State semester GPA of 2.200 or more on 12 or more graded hours (or the minimum grade point average established by the student's college, if higher) during the semester in question will not be dismissed.

7. Students who neglect their academic responsibilities may be dismissed at any time on recommendation of the academic dean.

8. Dismissed students will be readmitted only when approved for reinstatement by the Academic Standards Committee of the college the students are attempting to enter. Normally students must wait at least two semesters before being considered for reinstatement and are on academic warning at the time of readmission.

9. Students who have been dismissed or have had their enrollment withheld will receive a letter providing a contact person and information about reinstatement or enrollment procedures.

Reinstatement

Normally a student must wait at least two semesters before being considered for reinstatement.

A dismissed student will be readmitted only when approved for reinstatement by the academic standards committee of the college the student is attempting to enter; the application for reinstatement must be directed to the academic standards committee.

Students who earn a semester grade point average of at least 2.0 but less than 2.2 on 12 or more credits during the semester they are dismissed can be considered for immediate reinstatement.

Honors

Graduation honors

Degree candidates who have completed a minimum of 60 hours in residence, with at least 50 hours in graded courses, are considered for graduation with scholastic honors as follows: Students with a 3.950 or above K-State academic average are designated as *summa cum laude.* The remaining students in the upper three percent of the college graduating class are designated *magna cum laude.* Those remaining in the upper 10 percent are graduated *cum laude.* Doctor of veterinary medicine degree candidates are eligible to receive these honors based on courses completed in the professional program.

Semester honors

Students with 12 graded hours whose semester grade point average places them in the upper 10 percent academically of their classification and college will be awarded semester scholastic honors.

Credits for Extracurricular Work

Students may earn credit toward graduation by satisfactory participation in certain extracurricular activities. These activities, and the maximum semester hours of credit allowed, are as follows:

Subject and course	Semester Hours	Total Hours
KSU Symphony (MUSIC 130, 404)	1	4
Bands—Marching, Pep, etc. (MUSIC 115, 116, 401, 411)	1	4
Concert Choir (MUSIC 111, 400)	1	4
Collegiate Chorale (MUSIC 121, 403)	1	4
K-State Singers (MUSIC 125)	1	4
Concert Jazz Ensemble and Jazz Labs (MUSIC 298, 299)	1	4
Men's Glee Club (MUSIC 135, 408)	1	4
Women's Glee Club (MUSIC 140, 409)	1	4
Instrumental Ensemble (MUSIC 117, 280, 402, 480)	1	4
Vocal Ensembles (MUSIC 280, 480 voice)	1	4
Opera Workshop (MUSIC 475)	1	4
Debate (SPCH 210)	2	4
Kansas State Collegian Journalism (MC 360)	1	4
K-State Agriculturist (AGCOM 410)	1	4
K-State Engineer (DEN 200)	1	2
KSDB participation (MC 460)	1	3
Men's Athletics (ATHM)	1	4
Women's Athletics (ATHW)	1	4

Extracurricular credit is also available with the K-State Dance Workshop (through Dance Production class).

Credits may be counted as electives in a student's curriculum. A student may use no more than 8 semester hours in these subjects toward graduation and enroll for not more than two in a semester.

A student is regularly assigned to these activities, with permission of the instructor in charge of the work. A student participating in one or more of these activities must be enrolled even though the credits exceed the maximum for graduation.

Classification of Students

An entering high school graduate with less than 30 semester hours accumulated credit is classified as a freshman. A student is advanced to a higher classification upon successful completion of sufficient credit hours to meet the requirements as listed below:

Freshman	Sophomore	Junior	Senior	Fifth-year student*
Less than 30	30	60	90	120

*Applies only to the College of Architecture and Design and the College of Engineering.

Student Records

University policy

Kansas State University maintains various student records, to document academic progress as well as to record interactions with university staff and officials. To protect the student's rights to privacy, and to conform with federal law, the university has an established policy for handling student records. Interpretation of this policy is based on experience with educational records, and the policy itself may subsequently be modified in light of this experience. Notice of this policy and of students' rights under the federal law is given annually. Copies of this policy are available at the Registrar's Office, 118 Anderson Hall, and are published in the *Undergraduate Catalog* and in the *Course Schedule.*

Directory information

Certain information concerning students is considered to be open to the public upon inquiry. This public information is called directory information and includes: name, local address and telephone number, permanent address, photograph or likeness, e-mail address, college, curriculum, year in school, date and place of birth, dates of attendance at Kansas State University, awards and academic honors, degrees and dates awarded, most recent previous educational institution attended, participation in officially recognized activities and sports, and height and weight of members in athletic teams.

Directory information as defined above will be released upon inquiry, unless the student has requested that this information not be released. The student's request to have directory information withheld must be submitted each semester of enrollment and should be made at the Registrar's Office, 118 Anderson Hall, which will notify other appropriate university offices.

Confidential information

With the exception of the information noted above, students' records are generally considered to be confidential. The following policies govern access to confidential student records:

1. Each type of student record is the responsibility of a designated university official, and only that person or the dean, director, or vice-president to whom that person reports has authority to release the record. The responsible officials are:

a. Academic records: For undergraduates, the registrar, 118 Anderson Hall; for graduate students, the Graduate School office, Fairchild Hall.

b. Admissions records: For undergraduates, the director of admissions, Anderson Hall; for graduate students, the Graduate School office, Fairchild Hall.

c. Financial aid records: director of the Office of Student Financial Assistance, Fairchild Hall.

d. Business records: Controller's Office, Anderson Hall.

e. Traffic and security records: head of KSU Police Department, Edwards Hall.

f. Medical records: director, Lafene Health Center.

g. Counseling records: director, University Counseling Services, 232 Lafene.

h. Actions of academic standards committees: college dean.

i. Academic disciplinary records: chair, undergraduate grievance committee.

j. Non-academic disciplinary records: dean of student life, Holton Hall.

k. Housing records: director of Housing and Housing Services, Pittman Building.

l. Placement records: director of Career and Employment Services, Holtz Hall.

m. Evaluations for admission to graduate or professional programs: dean (of the graduate school or the appropriate college) or department head.

n. Special academic programs: Faculty member in charge of the program and dean of the college

o. Foreign student records: Foreign student advisor, International Student Center.

p. Test scores for College Level Examination Program (CLEP), American College Testing Program (ACT), Miller Analogies Test MAT), etc.: director of academic assistance center, Holton Hall.

2. Confidential educational records and personally identifiable information from those records will not be released without the written consent of the student involved, except to other university personnel, or in connection with the student's application for financial aid; or in response to a judicial order or subpoena; or in a bona fide health or safety emergency; or, upon request, to other schools in which the student seeks or intends to enroll; or to the U.S. comptroller general, the secretary of H.E.W., the U.S. commissioner of education, the director of the National Institute of Education, the assistant secretary for education, state educational authorities, or state and local officials where required by state statute adopted before November 19, 1974.

3. The responsible official may release records to university officials who have a legitimate need for the information in order to carry out their responsibilities.

4. All student records are reviewed periodically. Information concerning the frequency of review and expurgation of specific records is available in the Registrar's Office.

5. With certain exceptions, students may review records which pertain directly to them upon request and may obtain a copy of the record at cost, according to the following schedule.

a. Transcript of academic record: $5 per copy.

b. Medical records (Lafene Health Center): no charge to patient for medical purposes. A charge of $10 or $25 to outside parties with patient release.

c. Other records: .10 per page.

The major exceptions to student review are medical and counseling records. These may be released, however to other medical or psychological professionals at the written request of the student and may be inspected by the patient at the discretion of the professional staff. Other exceptions are law enforcement records, private notes of staff members, and financial records of parents.

6. A student may waive the right to review a specific record by submitting in writing a statement to this effect to the official responsible for that record. Examples are recommendations for career placement or admission to graduate study.

7. University personnel who have access to student educational records in the course of carrying out their university responsibilities shall not be permitted to release the record to persons outside the university, unless authorized in writing by the student or as required by a court order. Only the official responsible for the records has the authority to release them.

8. All personal educational information about a student released to a third party will be transferred on condition that no one else shall have access to it except with the student's consent. A record is maintained showing who has had access to student records, and this record is open to inspection by the student.

Release of grades

Reports of a student's grades are routinely sent to the student. Parents of dependent students may obtain grades by writing to the university registrar. Proof of dependency is required. The grades of other students will be sent to their parents only with written permission of the student.

When records may be withheld

In the case of a student who is delinquent in an account with the university, including unpaid traffic or parking violations, or about whom official disciplinary action has been taken, the appropriate university official may request that the student's record not be released. The effect of this action is that transcripts are not released, and registration forms are withheld.

In order for the action to be rescinded, the Registrar's Office must receive authorization from the official who originally requested the action, indicating that the student has met the obligation.

To contest the withholding of a record, a student must attempt to settle the dispute with the official who requested that the record be withheld. If this attempt to resolve the dispute is unsuccessful, the matter may be resolved in accordance with the process described in the following section. Further information concerning this policy can be obtained from the Registrar's Office, 118 Anderson Hall, 785-532-6254.

Review and challenge of records

Upon request to the official listed above, a record covered by the act will be made available within a reasonable time to the student and in no event later than 45 days after the request. Copies are available at the student's expense and explanations and interpretations of the records may be requested from the official in charge.

If the student believes that a particular record or file contains inaccurate or misleading information or is otherwise inappropriate, the university will afford an opportunity for a hearing to challenge the content of the record. Prior to any formal hearing, the official in charge of the record is authorized to attempt, through informal meetings and discussions with the student, to settle the dispute.

If this is unsuccessful, the matter will be referred to the appropriate vice-president. If the student is still dissatisfied, a hearing may be requested. The hearing, conducted by a hearing officer appointed by the president, will be held within two weeks. The student will have the opportunity at the hearing to present any relevant evidence, and a decision will be rendered within two weeks after the hearing. If the result does not satisfy the student, he or she may place a statement in the file.

Complaints

A student who believes the university has not complied with federal law or regulations may send a written complaint to the Family Educational Rights and Privacy Act Office, Department of Education, 400 Maryland, SW, Washington, DC 20202.

Transcripts

A transcript is a certified, official copy of your permanent academic record. Since it contains confidential information, it cannot be released to anyone other than you without written permission from you.

Each transcript costs $5, which is to be paid in advance by cash, check, or a MasterCard, Visa, or Discover credit card.

There is no additional mailing charge if the transcript is sent by regular mail. Priority mailing charge (continental USA only) is an additional $3 per envelope. Overnight charge (continental USA only) is an additional $10 per envelope. Fax charge is an additional $4 per fax.

If you are delinquent to the university, transcript services are withheld.

A transcript cannot be requested by telephone.

By mail or fax

Send your written request to:
Registrar's Office
Kansas State University
118 Anderson Hall
Manhattan, Kansas 66506–0114
Fax: 785-532-5599.

Include the following:

1. Your current name, plus any other name(s) you may have used when attending Kansas State University.
2. Your social security number.
3. Your date of birth.
4. Your beginning and ending dates of enrollment at K-State.
5. The number of transcripts you are requesting.
6. Where each transcript requested is to be sent (please provide an accurate and complete address). If separate sealed envelope is required for transcript, indicate in request.
7. $5 for *each* transcript requested.
8. Your original signature.
9. Your current home address and daytime telephone number.
10. Indicate if you want the transcript held until current semester grades are posted and/or until your degree is posted.
11. Fax requests require a MasterCard, Visa, or Discover card number and expiration date.

In person

Come to the Registrar's Office, 118 Anderson Hall, 8 a.m. to noon and 1 to 4:45 p.m.. You must have your K-State student ID or driver's license for identification purposes.

No one else (including your spouse, parent, etc.) may pick up your transcript without your written permission. (If someone else is to pick up your transcript, identify by name the person who is authorized to obtain your transcript and include your original written signature.)

Special note: A transcript picked up by *or* sent directly to you is stamped "issued to student." Some institutions will not accept a transcript that is marked "issued to student."

All-University Regulations

Student Conduct

Philosophy of student conduct

At Kansas State University students have a direct and primary role in the establishment and enforcement of campus and living group policies and regulations. The basic philosophy of discipline is one of education and enforcement of community standards. Since that is the ultimate purpose, we focus on the growth and development of the student. Most efforts are directed at preventing problems, or at least correcting them, rather than concentrating on punishment. The responsibility for proper conduct is put upon the student, not the university, with the assumption that most students do not try to intentionally cause violations, and will generally respect the rights and property of others.

The following principles govern the disciplinary process. Every effort is made to bring about outcomes that are positive for all parties involved; students will be members of all Student Governing Association judicial bodies; formal hearing processes are fundamentally fair and respect the rights of the individuals involved; confidentiality will be maintained; records of proceedings will be released only on written authorization of the student involved. The procedures are outlined in the SGA Judicial Code, included in the by-laws to the SGA Constitution.

Descriptions of the judicial structure and process, as well as university policies, are free and are available in the Office of Student Activities and Services in the K-State Student Union.

Prohibited conduct

Important information regarding the judicial process and student rights are available in the Office of Student Activities and Services in the K-State Student Union.

The following described behaviors constitute misconduct in which disciplinary sanctions will be imposed:

1. Acts of dishonesty, including but not limited to the following:

a. Furnishing false information to any university official, faculty/staff member, or office.

b. Forgery, alteration, or misuse of any university document, record, or instrument of identification.

c. Tampering with the election of any organization or student governing body.

2. Disruption or obstruction of teaching, research, administration, disciplinary proceeding, other university activities, including its public-service functions on or off campus, or other authorized non-university activities.

3. Conduct that threatens or endangers the mental or physical health or safety of any person, including, but not limited to physical abuse, verbal abuse, threats, intimidation, harassment, and coercion.

4. Attempted or actual theft of, or damage to, property.

5. Hazing, which is defined as an act which endangers the mental or physical health or safety of a student, which destroys or removes public property, for the purpose of initiation, admission into, affiliation with, or as a condition for continued membership in, a group or organization. Consent by the person hazed shall be no defense to the hazing.

6. Telephone harassment, which shall include:

a. Making calls containing lewd or obscene remarks.

b. Making calls intended to harass whether or not conversation ensues.

c. Making the telephone ring repeatedly with intent to harass.

d. Making repeated calls in which conversation ensues solely to harass.

7. Failure to comply with directions of university officials or law enforcement officers acting in performance of their duties or failure to identify oneself to these persons when requested to do so.

8. Unauthorized possession, duplication, or use of keys, or other devices that provide access to any university premises.

9. Unauthorized presence in or use of university premises, facilities, or property.

10. Violation of university policies, rules, or regulations.

11. Violation of federal, state, or local law.

12. Unauthorized distribution, use, or possession of a controlled substance as described in Chapter 65, Article 41 of Kansas Statutes Annotated on university premises or at university sponsored activities.

13. Unlawful use, possession, or distribution of alcoholic beverages or violation of the university Alcoholic Beverage Policy.

14. Illegal or unauthorized possession or use of firearms, explosives, weapons, or dangerous chemicals on university premises or at a university-sponsored or supervised activity.

15. Intentionally initiating or causing to be initiated any false report, warning, or threat of fire, explosion, or other emergency on university premises or at a university-sponsored activity.

16. Participation in a campus demonstration which unreasonably disrupts the normal operations of the university and infringes on the rights of other members of the university community; inciting others to disrupt scheduled and/or normal activities within any campus building or area; intentional obstruction which unreasonably interferes with freedom of movement, either pedestrian or vehicular, on campus.

17. Intentionally interfering with the freedom of expression of others on university premises or at a university-sponsored activity.

18. Conduct that is disorderly, lewd, or indecent; breach of peace; or aiding, abetting, or procuring another person to breach the peace on university premises or at university-sponsored activities.

19. Theft or abuse of computer time. This policy is currently under revision. Please contact the Office of Student Life for more information at 532-6432.

20. Abuse of the SGA Judicial Program, including, but not limited to:

a. Falsification, distortion, or misrepresentation of information.

b. Disruption or interference with the orderly conduct of a judicial proceeding.

c. Knowingly initiating a complaint without cause.

d. Attempting to discourage an individual's proper participation in, or use of, the judicial system.

e. Attempting to influence the impartiality of a member of a judicial board prior to, or during the course of, the judicial proceeding.

f. Verbal, written, phone, or physical harassment, and/or intimidation of a member of a judicial board.

g. Failure to comply with the sanction(s) imposed under this code.

h. Influencing or attempting to influence another person to commit an abuse of the judicial system.

21. Misconduct may also include any violation of any rules appearing in the leases and contract entered into by a student to obtain accommodations with the Department of Housing and Dining Services.

Academic Dishonesty

All academic relationships ought to be governed by a sense of honor, fair play, trust, and a readiness to give appropriate credit for the intellectual endeavors of others when credit is due. Since the academic community expects that the process of intellectual and creative endeavor is beneficial to a student, the student's original work, created in response to each assignment, is normally expected. K-State's policy on academic dishonesty assures due process and provides guidelines for action in instances where the proper academic relationships and attitudes have broken down.

Any student enrolling at K-State implicitly accepts the university's stipulations concerning academic honesty and the procedures they entail.

Complete copies of the academic dishonesty policy are available in the Office of Student Activities and Services in the K-State Student Union. The policy outlines grievance procedures for all matters of academic dishonesty, grade appeals, or other academic grievances brought by students against faculty members or faculty members against students.

Plagiarism

Plagiarism, taking someone else's intellectual work and presenting it as your own, covers unpublished and published sources. Borrowing another's term paper, handing in a paper purchased from an individual or agency, or submitting papers from living group, club, or organization files are all punishable as plagiarism.

The standard for attribution and acknowledgement of literary indebtedness is set by each discipline. Students should consult with their department or with recognized handbooks in their field if in doubt.

The guidelines apply to faculty and research assistants in their possible use of students' and colleagues' research and ideas, as well as to students' use of source materials and authorities, and student use of other students' ideas and work.

Other forms of academic cheating

Other forms of academic dishonesty subject to penalties include, but are not limited to, consultation of books, library materials, or notes during a test; use of crib sheets or hidden notes during an examination or looking at another student's test; having a confederate supply questions or answers from an examination to be given or in progress; having another person stand in on an exam or other graded activity; deliberate falsification of lab results; submission of falsified data; procurement or alteration, without permission, of examinations or other academic exercises; collaborating on projects where collaboration is forbidden; submitting previously graded work for a new assignment (without the instructor's consent), and other forms of academic dishonesty and fraud.

Adjudication and penalties

Guidelines for adjudicating charges of dishonesty are described in the policy. Further information is contained in the Faculty Senate Minutes, April 11, 1989, Student Grievance Procedures.

The minimum penalty for cheating on an examination or paper, if proved, is an F for the assignment; maximum penalty is dismissal from the university. Minimum penalty for cheating on a comprehensive final, if proved, is an F for the course; maximum penalty is dismissal from the university.

In a second proved instance of academic dishonesty, suspension from the university is automatic. Dismissal from the university is the maximum penalty.

University Policies

Students, faculty, and administrators are members of a community dedicated to the growth and development of individuals.

Enrollment at K-State entails responsibilities as well as privileges. Acceptance of and adherence to the following policies is necessary for the protection of the rights of others and the protection and health of the community.

Complete copies of these policies, which are excerpted below, are available in the Office of Student Activities and Services in the K-State Student Union and the Office of Student Life in Holton Hall, unless otherwise indicated. More complete information about these policies can be found in the student life handbook section of the campus phone book.

Academic grievance

The following procedures will be employed to deal with all matters of cheating, academic dishonesty, grade appeals, or other academic grievances brought by students against faculty members or faculty members against students. These procedures will serve three functions: (1) safeguard the rights and academic freedom of both students and faculty, (2) assure due process, and (3) provide for consistency in handling undergraduate academic grievances throughout the university.

Grievances against faculty or administrators

Unethical actions by faculty or administrators should be reported as soon as possible so that appropriate action can be taken. The grievance must be made within six months of the alleged unethical action(s). Students should begin by contacting the office of their dean. The dean, or a representative of the dean, will describe the procedure to be followed and will aid the student in procedural matters. Further, the dean or representative will appoint a faculty member as an advocate for the student if the situation seems to warrant an advocate or if the student requests an advocate. If a faculty advocate is appointed, the student will participate in the selection of, and must agree to the appointment of, the person selected. The advocate need not be in the college.

Grievances involving student academic dishonesty

The procedures for handling charges of cheating or other academic dishonesty are given in the policy on academic dishonesty which immediately follows this section on academic conduct. In any case involving academic dishonesty, the Undergraduate Grievance Board may take other equitable actions in addition to any penalties provided by the academic dishonesty policy.

Grievances involving change of grade (but not academic dishonesty)

a. All efforts will be made by the student and instructor involved in any grievance to settle all disputes that may arise. Grade appeals must be initiated within six months following the issue date of the grade in question.

b. If a grade change grievance is not resolved by the student and instructor, the student may appeal in writing to the department head who will act as a mediator in the dispute. This appeal should be made within two weeks of the date of the original appeal. At this time, the student may petition the dean of his or her college for an ombudsperson. The duties of the ombudsperson are to arrange meetings of all concerned parties and report actions taken at each level to the appropriate persons or groups. The role of the ombudsperson is to expedite the process and to ensure a fair hearing.

c. If the grievance has not been settled to the student's satisfaction at the department level, written appeal may be made to the dean of the college in which the course is taken. This appeal should be made within two weeks of the date of receipt of the appeal by the department head. The dean will act as a second mediator.

d. If the student does not feel that an adequate solution has been reached in any academic dispute, she/he may appeal in writing to the Undergraduate Grievance Board, which will arbitrate the dispute. This appeal should be made within two weeks of the date of receipt of the appeal by the dean.

e. The two week time limits given in the sections above are intended to move the grievance process along at a reasonable rate. The limits may be modified for reasonable reasons such as illness, scheduled academic holidays, or mutual consent of both parties.

Advertising, sales, and solicitation

Facilities of Kansas State University are not available for unrestricted use by non-university groups. University property may not be used for commercial purposes except when sponsored by a university-affiliated organization or department. The regulations governing fund-raising and the posting and distribution of literature are available in the Office of Student Activities and Services.

HIV/AIDS university guidelines

Under the direction of the Kansas Board of Regents, the university has developed guidelines to assist students, faculty, and staff in the event that a situation involving Human Immunodeficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) should occur. Current copies of the guidelines are available upon request from the Department of Health Education and Promotion, Lafene Health Center.

Alcohol and cereal malt beverage policy

The legal drinking age in Kansas for alcoholic beverage is 21. The Kansas Board of Regents policy permits the use and sale of cereal malt beverages (3.2 beer) under authorized and appropriately controlled conditions and regulations. By state law, the sale of alcoholic liquor is not permitted on state property. Included in the K-State policy is information on alcohol and cereal malt beverage consumption in residence halls, at athletic events, and for student organizations.

Drug-free workplace policy

In 1988, Congress passed the Drug-Free Workplace Act. This act applies to all institutions holding and applying for federal grants and contracts. K-State adopted the policy that the unlawful manufacture, distribution, dispensing, possession, or use of controlled substances is prohibited in its workplace.

Facilities usage

K-State facilities are available for use by authorized groups for activities that complement the teaching, research, and service programs of the university. Policies and procedures for use of K-State facilities (other than the K-State Student Union) are available in the Division of Facilities in Dykstra Hall.

Policies and procedures for use of the K-State Student Union are available in the Union Reservations Office on the second floor or in the Handbook for UAB Registered Organizations.

Gender

The university seeks to create an environment in which all students, faculty, and staff interact solely on the basis of individual strengths and characteristics without having those interactions shaped by generalizations, stereotypes, or valuations based on gender. Copies are available in the Women's Center in Holton Hall and Affirmative Action Office in Anderson Hall.

Political activity guidelines

All members of the university community are encouraged to take advantage of opportunities to educate themselves regarding the candidates and issues relating to national, state, and local elections. Copies of the university guidelines related to political activities on campus are available in the Office of Student Activities and Services.

Prayer at university functions

Nonsectarian prayers, invocations, benedictions, or silent meditations are permitted at university functions to enhance mutual respect and awareness.

Racial and/or ethnic harassment

Racial and/or ethnic harassment is prohibited by K-State and includes conduct toward an individual or group on the basis of race, ethnicity, or racial affiliation that has the purpose and effect of creating an intimidating, hostile, or offensive work or educational environment; interfering with an individual's work, academic performance, living environment, personal security, or participation in any university-sponsored activities; or threatening an individual's employment or academic opportunities.

Racial and/or ethnic harassment should be reported to the university administrator responsible for the department or unit or to the Affirmative Action Office. For students with complaints of harassment by other students, the dean or associate dean of student life may be regarded as the appropriate administrator. Copies of the policy are also available from the Affirmative Action Office in Anderson Hall.

Religious activities

In a pluralistic, multicultural, and interdenominational university environment, freedom of worship is supported. Religious programs and activities must comply with university policies as well as federal, state, and local laws. In keeping with its education mission, the university may specify the time, place, and manner of religious events, but may not regulate their content.

Since students may refrain from class and work activities on major faith holidays, faculty and staff are requested to give consideration to these religious holidays in planning exams, deadlines, and class requirements. Students are requested to coordinate their plans with instructors in preparation for these observances. Assistance or clarification may be received at the Office of the Coordinator of Religious Activities, Holton Hall.

Sexual harassment policy

K-State prohibits sexual harassment and has defined sexual harassment as any behavior that, through inappropriate sexual content or disparagement of members of one sex, interferes with an individual's work or learning environment. This policy applies to the working and learning relationships of all individuals within the university community—faculty, staff, and students.

Sexual harassment should be reported to the university administrator responsible for the department or unit or to the Affirmative Action Office. Students with complaints of harassment by other students should contact the Women's Center or the Affirmative Action Office. Copies of the Policy Prohibiting Sexual Harassment are available from the Office of Student Activities and Services, departmental offices, the Women's Center, or the Affirmative Action Office.

Sexual violence

No form of sexual violence will be tolerated or condoned at Kansas State University. This policy prohibits not only those acts commonly understood to constitute "sexual assault," but all attempts to coerce sexual activity as well. This university will investigate acts of sexual violence perpetrated by students and will respond with appropriate action, which may include suspension or dismissal. Copies are available in the Women's Center in Holton Hall.

Student discrimination review committee guidelines

The Student Discrimination Review Committee hears complaints of discrimination from students based on race, color, religion, national origin, sex, sexual orientation, disability, or age in employment, academic areas or other programs, services, or activities in the university community. This committee is an appellate body and is to be used if a satisfactory resolution is not reached at the departmental or unit head level.

The committee is appointed by the university president upon recommendations from the student body president and the president of Faculty Senate. Copies of this policy are available from the Office of Student Activities and Services or the Affirmative Action Office.

Student Financial Assistance

Larry Moeder, Director
104 Fairchild Hall
785-532-6420

Kansas State University administers an extensive financial aid program to bridge the gap between family contribution and the cost of attending the university. Detailed information concerning financial aid is available on request from the Office of Student Financial Assistance, 104 Fairchild Hall.

The Free Application For Federal Student Aid (FAFSA) should be used by students applying for all federal and state aid programs. Students living in Kansas may obtain the FAFSA from any high school counselor or from K-State. The priority date for submitting the FAFSA is March 1 before the fall semester in which the student intends to enroll.

Programs

Scholarships

Each year nearly 4,000 Kansas State University undergraduate students receive more than $5 million of scholarship assistance based on their academic records, financial need, and/or leadership qualities. The K-State scholarship application is due by February 1 each year for the following academic year. Applications and scholarship information are available from high school counselors, the Office of Student Financial Assistance, and the various colleges at K-State.

Grants

Approximately 6,000 students are assisted through two federal grant programs.

Assistance exceeds $8 million. The Free Application For Federal Student Aid is the application for these programs and should be filed by March 1.

Loans

K-State has six kinds of student loans: the Federal Perkins Loan, the Federal Subsidized Direct and the Federal Unsubsidized Direct loans, the Federal Parent Loan for Undergraduate Students (PLUS), the Health Professions Student Loan (HPSL), and Alumni/Foundation Loans.

The Perkins Loan is a five percent interest loan. The Direct Loans are variable interest loans. The HPSL carries a five percent interest rate. At the time the borrower begins repaying these loans, the interest begins accruing on the unpaid balance. The repayment period may be up to 10 years.

The Federal Subsidized and Unsubsidized Direct Loans contain the same basic annual limits and interest rates, which is capped at 8.25%. The Subsidized Direct Loan is based on financial need while the Unsubsidized Direct does not carry a need requirement. Repayment on the principal of both loans begins six months after the student stops attending at least half time. In school interest payments on the Subsidized Direct Loan is maintained by the federal government and by the student on the Unsubsidized Direct Loan.

The Alumni Loan/Foundation Loan charges six percent interest payable annually from the date of the loan, with $50 monthly payments beginning six months after the borrower leaves school.

The Federal PLUS loan is capped at 9 percent but has a variable interest rate from year to year. It begins accruing interest 60 days after the borrower receives the money. Parents borrowing on their student's behalf, begin monthly payments either 30 or 60 days (depending on the lender) after receiving the money.

Qualified students also may borrow through emergency, alumni, and endowment funds to meet specific needs. Interested students should contact the Office of Student Financial Assistance.

Employment

Kansas State University provides services for students seeking part-time employment to help offset educational, living, and social expenses. The Student Employment Center handles two categories of jobs: College Work-Study Program jobs and Campus Payroll jobs. In addition, the center handles the advertising of several off-campus employment positions. All of the center's jobs are posted on the job board, which is in the K-State Student Union.

To be employed on the hourly student payroll, a student must be enrolled in at least 6 resident semester credit hours at K-State during a fall or spring semester, and at least 3 resident semester credit hours at K-State during a summer term, or have been enrolled in at least 6 resident semester credit hours at K-State during the preceding spring semester.

Services for veterans

The university maintains a veterans' service to aid veterans and children of deceased or disabled veterans in securing educational benefits.

Veterans who have more than 181 days of service after January 31, 1955, may be eligible for educational benefits. Children of a deceased or disabled veteran may be entitled to educational benefits, providing the veteran's death or disability was due to active service in World War I, World War II, the Korean Campaign, or Vietnam.

Information may be obtained from your nearest Veterans' Administration Office or the Office of Student Financial Assistance.

Satisfactory Academic Progress

Federal regulations require that financial aid recipients make satisfactory academic progress in order to remain eligible for federal financial assistance.

Satisfactory academic progress standards, therefore, apply to students receiving financial assistance from such program as: Federal Pell Grant, Federal Supplemental Educational Opportunity Grant (FSEOG), State of Kansas Scholarship, Federal Perkins Loan, Federal Stafford Loan, Federal Direct Loan, Federal Parent Loan for Undergraduate Students (PLUS), Health Professions Student Loan, and College Work-Study. The only programs not covered by Kansas State University's satisfactory academic progress policy are athletic grants-in-aid and non-federally funded forms of assistance.

To measure satisfactory academic progress, K-State has established a framework for evaluating a student's successful progression toward a degree. This policy has two components: quantitative and qualitative. Students are monitored for satisfactory academic progress beginning with their first term for which federal financial assistance is received.

Quantitative measure

Two measurements make up the quantitative portion of K-State's satisfactory academic progress policy.

1. Successful completion of courses

A student must successfully complete a minimum number of his/her scheduled courses for which federal financial assistance has been received. For example, if an undergraduate student's financial assistance is calculated on a full-time basis (12 or more hours) for one semester, that student must, at a minimum, successfully complete at least 9 hours for that semester. See the chart below for further details.

Undergraduate requirements per semester

Hours for which aid was received	Minimum hours to be successfully completed
12 hours scheduled (full-time aid)	9 hours
9 hours scheduled (3/4-time aid)	7 hours
6 hours scheduled (1/2-time aid)	4 hours

Graduate requirements per semester

Hours for which aid was received	Minimum hours to be successfully completed
9 hours scheduled (full time)	7 hours
7 hours scheduled (3/4-time)	5 hours
5 hours scheduled (1/2-time)	4 hours

Hours successfully completed in excess of the minimum requirement will result in the student earning "credits." Such credits are carried forward to subsequent semester(s) as part of the student's satisfactory academic progress record.

Alternatively, failure to meet the noted minimum requirements will result in the accumulation of "deficiencies," which are also carried forward to subsequent semesters. Courses for which a grade of F, incomplete (I), (IX), withdrawn (WD), no grade recorded (NR), or no credit received (NC) is recorded are not considered to have been successfully completed.

Note: Graduate students will receive "credits" for any incompletes associated with research conducted as part of the published degree requirements, elective or required course work, or as part of developmental studies once credit has been posted.

2. Maximum timeframe

Federal regulations have also established a maximum timeframe in which a student is expected to have completed a program. At K-State, a student may not receive financial assistance if he/she has exceeded the following number of earned credit hours:

- Undergraduates: 180 hours
- Master's degree students: 60 hours
- Doctoral students: 120 hours

Qualitative measure

In addition to the quantitative component for satisfactory academic progress, federal regulations also require that a student must, at a minimum, maintain a 2.0 cumulative grade point average after having completed 60 hours. K-State's satisfactory academic progress policy requires that all students classified as juniors and above maintain a cumulative GPA of 2.0 or higher in order to receive financial assistance.

Financial assistance warning

Students who have accumulated any "deficiencies" (quantitative component) and/or who have failed to meet the minimum 2.0 cumulative GPA (qualitative component) within a given award year will be placed onto a "financial assistance warning" status for one academic year by K-State's Office of Student Financial Assistance.

A student will be removed from the warning status if he or she successfully removes any deficiencies and/or raises his or her cumulative GPA to a 2.0. during the academic year.

Failure to remedy either one of the noted components within one academic year will result in the student being placed onto a "financial assistance exclusion" status.

Financial assistance exclusion

Students who have reached the maximum allowable hours for which financial assistance may be received and/or who have failed to remove themselves from the "financial assistance warning" status will be placed onto "financial assistance exclusion." Students on financial assistance exclusion will be denied financial assistance until they meet the above noted qualifications for satisfactory academic progress.

Students may appeal their exclusion status by filing a satisfactory academic progress appeal. Appeal forms may be obtained at K-State's Office of Student Financial Assistance. The appeal requires statements from both the student and the student's academic advisor to be considered complete.

An appeal may be either approved or denied. If approved, financial assistance may be awarded to the student subject to its availability for the semester in question. Decisions regarding satisfactory academic progress appeals are final and not subject to further review.

Transfer students

If a transfer student meets established federal guidelines for student aid eligibility, he or she may receive financial assistance at K-State. The first evaluation of a transfer student's academic progress at K-State occurs at the same time as the scheduled review of all financial aid recipients at the end of the spring semester. Credit hours earned by a student at another institution will only be included in satisfactory academic calculations after K-State's Office of the Registrar has formally accepted the transfer credits.

Services for Students

Academic Assistance Center

Judith Lynch, Director
Holton Hall
785-532-6492

The Academic Assistance Center provides a comprehensive and coordinated system for the identification, diagnosis, advisement, counseling, and referral of students to the various academic support services available at K-State. In addition, the AAC provides direct academic support through programs which include:

Tutorial assistance

Free tutoring is available in a variety of introductory courses through the EOF tutoring program. Students desiring assistance are assigned to small groups that meet on a weekly basis with a peer tutor who assists them with course content and learning strategies.

The University Experience

The AAC offers the course EDCEP 111 The University Experience to new students for 1–3 hours of credit. This course provides any new student with a general orientation to K-State and university life. Topics covered include study skills, effective use of campus resources, academic planning, career decision making, and university policies and procedures.

Math assistance

The AAC provides a math review class for students desiring basic review of pre-algebra mathematics before actually enrolling in a formal mathematics course. Assistance with Intermediate or College Algebra is available to students enrolling in The University Experience as a part of that course. Students who are unsure of which math course to enroll in may take a 45-minute math placement exam. This assessment is available on a walk-in basis in the AAC.

PILOTS program

PILOTS is a cooperative, year-long program meant to provide structure and encourage academic discipline and critical reasoning for qualifying entering freshmen. Students enjoy smaller classes, a computer Reading/Writing Lab, a clustering of support courses, and free tutoring. Classes are geared to a diversity of learning styles.

Credit by examination

K-State offers students a variety of quiz-out programs through which a student may earn academic credit in specific courses. The AAC is the campus service agency for the College-Level Examination Program (CLEP), the DANTES Program, and the American College Test Proficiency Examination Program (ACT-PEP). The center will also provide consultation and conduct utility studies for academic departments interested in implementing a credit-by-examination program. Information and registration for the CLEP, DANTES, and ACT-PEP programs are available from the AAC.

Entrance and professional examinations

The AAC administers the following examinations, which are often required to enter selected undergraduate, graduate, or professional programs. Contact the AAC to obtain further information concerning these and other examinations.

American College Test (ACT)
Dental Admissions Testing Program
Graduate Management Admissions Test
Graduate Record Examination
Insurance Institute Exams
Law School Admission Test
Medical College Admission Test (MCAT)
Miller Analogies Test
Optometry Admission Testing Program
Praxis Series (NTE, PPST)
Scholastic Aptitude Test (SAT)
Test of English as a Foreign Language (TOEFL)
Test of Spoken English
Veterinary College Admission Test
COPA (Planners)

Academic and Career Information Center

Tinsley Furry, Coordinator
14 Holton Hall
785-532-7494

The Academic and Career Information Center provides assistance to students in their exploration and selection of academic majors and career options. ACIC resources include a variety of printed and computer software programs.

Available resources include career assessments containing exploration inventories related to individuals' interests, abilities, experiences and career-related values; career information library housing comprehensive reference materials including books, files, and video tapes; curriculum guides; employment profiles of recent college graduates; graduate school directories; and career planning seminars and courses for credit focusing on the elements and processes of career development.

Adult Student Services

Nancy Bolsen, Director
201 Holton Hall
785-532-6434

Adult Student Services assists undergraduate and graduate students who are married, have children, are re-entering the educational system after several years, or are 25 years of age or older. Staff members assist students with admission and enrollment and provide information or referrals for housing, child care, refresher and study skills courses, tutoring, financial aid, scholarships, insurance, public school enrollment, community family programs, emergency locator and commuter information. The staff may be able to assist the returning K-State student in advising about remedying past academic deficiencies. Staff also help students with their everyday challenges and special concerns before, during, and after their admission to K-State.

Alcohol and Other Drug Education Service

Bill Arck, Director
214 Lafene Health Center
785-532-6927

The Alcohol and Other Drug Education Service offers information about physical effects and social issues related to alcohol and other drug use or abuse. Campus services provided include media activities such as newspaper ads, posters, brochures, and radio public service announcements; coordination of and participation in awareness events, such as National Collegiate Alcohol Awareness Week and presentations providing information on alcohol and drug-related topics.

This office can also make referrals to various resources for those with concerns about their own or another's possible alcohol and/or drug use or abuse.

Career and Employment Services

Tracey L. Fraser, Director
Holtz Hall
785-532-6506
E-mail: ces@ksu.edu
http://www.ksu.edu/ces

Career and Employment Services assists students and alumni with activities related to finding employment. Whether seeking part-time employment while attending classes, a summer job, a curriculum-related internship, experience through experiential learning, or a full-time career position, CES can help. Career and Employment Services is a service and resource center, containing an extensive, up-to-date job search library, a staff dedicated to assisting students and alumni in their job search, and contacts with thousands of employers throughout the country.

The staff is committed to fostering self-direction and personal responsibility in those seeking help with their career development. Strong academic programs, capable students, a strong work ethic, and a coordinated job search program combine to give K-State students a distinct advantage over those from many other institutions.

The CES home page contains current information for events, companies recruiting on campus, career and student employment jobs listed with CES, and links to career and employment sites on the Internet. The career resource library includes job vacancy announcements, employer directories, company profiles, salary information, job search training materials, and prospective employer lists. Workshops and individual career advisors provide training and consultation on resume writing, interviewing, job search and career planning. Unique services include an extensive on-campus interview program, interview clinics and career fairs.

Cooperative Houses

Clovia

Alpha of Clovia Cooperative House accommodates up to 62 women. Although 4–H members are given preference, any undergraduate woman is welcome to apply for membership. To keep the house self-supportive, the women at Clovia contribute four to six hours a week for duties. Providing economical living conditions for members is a main goal at Clovia. Housebills are approximately $180 per month, and vary according to social activities and other house functions. Rent is $275 per semester. Applications can be obtained at County Extension Offices, the State 4–H Department at Kansas State University, or the Clovia Membership Chairman, 1200 Pioneer Lane, Manhattan, Kansas 66502, 785-539-3575.

Smith Scholars Program

The Smith Scholars Program provides a broad learning experience for 40 young men each year. Smith Scholars are selected on the basis of academic promise and potential to contribute to a structured program of organized living. The Smith Scholars live in Smith Scholarship House, a cooperative living arrangement wherein the men do the cooking and housekeeping, providing a substantial savings in housing costs over most other types of living groups.

The Smith Scholars Program is a joint project of the Maitland E. Smith Scholarship House Alumni Association and the KSU Foundation. For more information write to the Smith Scholars Program, 331 North 17th Street, Manhattan, Kansas 66502; or phone 785-539-4685.

Disabled Student Services

Gretchen Holden, Director
Holton Hall
V/TT 532-6441
Fax: 785-532-6457
http://www.ksu.edu/dss/

Disabled Student Services works to meet the needs of students with documented disabilities by providing academic accommodations and related services. Staff will work as a liaison with students' instructors. Writing assistance and study skills instruction may be of special interest to students with learning disabilities.

Other supportive services include readers, notetakers, typing, and errand service on campus. Tutorial assistance is available for some classes. Assistance is provided in obtaining taped texts. Test taking accommodations, including extended time for test taking, oral examinations, and scribes, can be arranged through this office. Classes scheduled in inaccessible locations will be relocated for students with mobility impairments upon request. Individualized help with enrollment is available. Efforts will be made to provide interpreters for hearing impaired students when requested.

Special equipment available to students includes a talking calculator, FM Listening Systems, Arkenstone Reading Machine, variable-speed tape recorders, and TT (telephone for the hearing impaired). A shuttle van, equipped with an hydraulic lift, operates on campus between all buildings and is available to students with either temporary or permanent physical disabilities. Accessible housing is available.

Educational Supportive Services

Kathleen Greene, Director
Holton Hall
785-532-5642

Low-income students and first-generation college students are assisted in setting and attaining realistic educational goals and are provided information about graduate-level educational opportunities. Students admitted and enrolled at K-State are offered educational supportive services including the study skills and academic enrichment program courses, academic preadvising, individualized tutorial assistance, and a variety of referral services.

McNair Scholars Program

The McNair Scholars Program, named for the African American astronaut who died in the 1986 space shuttle explosion, encourages and prepares academically promising students to pursue doctoral degrees. McNair Scholars are from low-income and first generation college educated backgrounds or are from minority groups who are underrepresented in graduate study.

Staff will assist McNair Scholars in selecting an appropriate graduate school for their career goals, in preparing for the Graduate Record Examination, and in applying for graduate admittance and financial assistance. Each year McNair Scholars will be matched with a faculty mentor and will work on research projects for which they will receive a stipend.

Greek Affairs

Barb Robel, Advisor
Holton Hall
785-532-5546

Sororities

Booklets describing sororities and setting forth the provisions regulating selection of new members are provided to all prospective freshmen and interested upperclass-women by Panhellenic Council.

House bills in sororities will average approximately $1,700 a semester. This includes room, board, and sorority dues. Freshman members, however, live in residence halls and pay sorority dues of approximately $80 a month.

The following national sororities have established chapters at K-State: Alpha Chi Omega, Alpha Delta Pi, Alpha Kappa Alpha, Alpha Xi Delta, Chi Omega, Delta Delta Delta, Delta Sigma Theta, Gamma Phi Beta, Kappa Alpha Theta, Kappa Kappa Gamma, Pi Beta Phi, Sigma Gamma Rho, Sigma Kappa, Sigma Lambda Gamma, Sigma Sigma Sigma, and Zeta Phi Beta.

Fraternities

Fraternities select new members primarily during the summer months. High school seniors are often guests at fraternity houses during their senior year, and throughout the spring and summer months each fraternity has representatives visiting high school seniors and their parents in Kansas and surrounding states.

Freshman men may live in a fraternity house if they accept invitations to membership before classes start and if they cancel their residence hall contracts. Costs will average $1,700 a semester.

The following national fraternities are established at K-State: Acacia, Alpha Gamma Rho, Alpha Phi Alpha, Alpha Tau Omega, Beta Sigma Psi, Beta Theta Pi, Delta Chi, Delta Sigma Phi, Delta Tau Delta, Delta Upsilon, FarmHouse, Kappa Alpha Psi, Kappa Sigma, Lambda Chi Alpha, Omega Psi Phi, Phi Delta Theta, Phi Gamma Delta, Phi Kappa Theta, Pi Kappa Alpha, Pi Kappa Phi, Sigma Alpha Epsilon, Sigma Chi, Sigma Lambda Beta, Sigma Nu, Sigma Phi Epsilon, Tau Kappa Epsilon, Theta Xi, and Triangle.

Housing and Dining Services

Charles Werring, Director
104 Pittman Building
1-888-568-5027 (toll-free)
785-532-6453
E-mail: housing@ksu.edu
http://www.ksu.edu/housing

The university encourages all new K-State students to live in an organized living group, such as a residence hall. Living in a residential community helps provide students with a sense of belonging and an avenue for getting involved. Research indicates that academic achievement is enhanced by involvement. Students who choose a community-based living group are provided many varied opportunities for interaction with other students and university staff. Furthermore, the opportunity to participate in organized social, athletic, and educational events is highly rated as a catalyst for career success.

Kansas State University provides on-campus residence hall living for approximately 3,800 students, and 480 apartments for students and their families.

Residence halls

K-State residence halls have a rich tradition of providing a living and learning environment that encourages personal growth and academic success.

A number of lifestyle options exist, including academic cluster areas, intensive study floors, and nonsmoking areas. Additional information on these options is available on request.

An academic-year housing and dining services contract is issued to the student following the receipt of a residence hall room application and $25 nonrefundable application fee for fall enrollees and $12.50 for those entering in the spring.

The cost of the contract is set on an annual basis. Students may select a full-semester or a monthly payment plan.

Smurthwaite Scholarship/ Leadership House

The Smurthwaite Scholarship/Leadership House is a special leadership and personal development program for women who would like to become active in leadership positions in student government, academic organizations, and co-curricular organizations.

Assignment to Smurthwaite Scholarship/ Leadership House is made through a special application process. Because space is limited and assignment is not guaranteed, it is best to also go through the regular residence hall application and contract process.

Academic support

Residence halls offer individualized academic support to residents through trained staff, orientation programs, and expanded access to faculty and advisors. Computer labs, resource areas, and a calendar of tutorial sessions make the residence halls a great environment for learning and academic success.

Leadership and involvement opportunities

Hall Governing Board (HGB) and floor governments plan and implement educational and cultural programs, intramural events, community service projects, and more. The Judicial Board provides an opportunity for students to address one another regarding policy violations that impact the community. The Kansas State University Association of Residence Halls (KSUARH) works closely with hall representatives to develop and implement policies that promote respect and acceptance of all students in the residence halls.

Family housing

Student families and nontraditional students have access to one- and two-bedroom apartments at Jardine Terrace, both furnished and unfurnished. These affordable apartments are adjacent to the campus. Coin-operated laundry facilities are available.

The rental includes gas, water, and trash. A deposit equivalent to one month's rent is required. Assignments are made on a first-come, first-serve basis, and early application is recommended. Families residing in Jardine Terrace Apartments use a residents' council form of government to regulate community life.

Apartments are partially accessible for people with physical limitations. The Department of Housing and Dining Services is pleased to work with students and family members to accommodate special needs.

International Student Center

Donna Davis, Director
785-532-6448

The International Student Center provides a comfortable atmosphere where people wanting to increase their international perspective can find new friends. Made possible by a private gift, the center includes a multipurpose meeting room, dining room, kitchen, and reading lounge. Students from everywhere pass through the center each day, sharing cultures, traditions, recipes, language lessons, and their common concern for what is happening in today's world. Everyone is welcome to join in the programs and activities of the International Student Center and the various international student organizations.

Foreign Student Office

Adjacent to the International Student Center is the Foreign Student Office. This office provides administrative services required for international students and scholars by their home countries and the United States Immigration and Naturalization Service. The office also acts as the university's primary resource for international student programs.

The university recommends that international students and their dependents (if they are with the student) purchase or be in possession of a medical insurance policy or equivalent coverage. Medical insurance can be purchased on the campus or from other independent agencies.

K-State Student Union

Bernard J. Pitts, Director
785-532-6591

The K-State Student Union is the host and campus center for social, recreational, educational, and cultural activities. It opened in 1956 and is supported by student fees and generated revenue.

Our programs and services are intended to service students, faculty, staff, alumni, university departments, and friends of the university in the continuing effort to make the Union a center for campus life. The facility features the official K-State bookstore; multiple food service options; a recreation area with automatic-scorer bowling, billiards, and pro shop; an art gallery; a full-service bank; automatic bank teller machines; copy center; lounges; two auditoriums; campus vending service; and more.

Union Program Council is the student volunteer program arm of the K-State Student Union. UPC provides more than 400 programs a year to enrich the out-of-classroom experience for all students. UPC programs join with other areas of the university in an effort to help contribute to the extracurricular development of the student.

The Union Governing Board, made up of students, faculty, and staff members, establishes building policy and provides direction under which the K-State Student Union director and staff operate.

The Office of Student Activities and Services is located on the ground level.

Lafene Health Center

Lannie W. Zweimiller, Director
785-532-6544

The Lafene Health Center is a modern ambulatory healthcare facility designed to provide for most student outpatient health needs. The health center is fully accredited by the Joint Commission on Accreditation of Healthcare Organizations. Students who have paid the health fee as a part of their tuition are eligible for care. Non-student spouses, university conference participants, and other campus visitors may receive care upon payment of a special fee.

Lafene Health Center provides, through a full complement of medical and other professional personnel, a range of services that include special clinics for sports-related injuries, women, and allergies and immunizations, as well as a clinic for general care. Also included are services in health education, nutrition, and physical therapy. The services of a pharmacy, laboratory, and x-ray are available at reduced rates.

The center is staffed by full-time physicians with medical support personnel. When necessary, the student is referred to specialists for treatment at the student's expense.

After regular clinic hours, a student who is ill or injured may receive medical care at a local hospital, at the student's expense. Home visits are not made. The local ambulance service is available, when needed, to transport patients to the appropriate health care facility.

Insurance

It is strongly recommended that all students at K-State carry medical insurance, either through the parents' plan at home or through the university-sponsored student health insurance plan available at special rates. This latter plan covers most services provided at Lafene Health Center and allowed claims for medical expenses if the student requires care away from the campus.

Medical history

K-State requires a complete medical history, including a current immunization record, on all new students or transfer students. This history must be completed on the Kansas State University medical history form and is required prior to provision of non-emergency treatment at the health center. A physical examination is not required, but encouraged, and a copy of this examination assists the staff in evaluating illnesses. If a student has a continuing medical problem, a summary from the attending physician is helpful should treatment at the center be needed. Students receiving allergy injections must furnish instructions from their allergist before injections can be administered at the health center.

Multicultural Student Organizations

Dawnielle Bianca Robinson, Coordinator
224 Anderson Hall
785-532-6436

The Office of Multicultural Student Organizations provides support and assistance to all multicultural students through individual counseling as well as through building strong cultural groups that help foster the educational development of multicultural students on campus. The office provides assistance to Asian–American Student Body, Black Student Union (BSU), the Hispanic American Leadership Organization (HALO), the Native American Student Body (NASB), and other cultural and academic interest organizations focusing on multicultural students. The office assists organizations in sponsoring programs and activities that heighten multicultural awareness at K-State and in the community.

New Student Services

Pat J. Bosco, Associate Vice President/
Dean of Student Life
Susan Hansen, Assistant Director
122 Anderson Hall
785-532-7091

New Student Services works with prospective students and their families. Admissions representatives meet with high school students during school visits, college fairs, and special events.

New Student Services coordinates campus visits, orientation and enrollment, and the Presidential Lecture Series.

Off-Campus Housing

The Office of Student Activities and Services maintains an up-to-date listing of major apartment complexes, real estate agents, and property management companies. The office also provides a bulletin board in the Union that lists available rental units, with information on cost, size, restrictions, etc., and other housing options. A roommate matching service is also available.

Office of Student Life

Pat J. Bosco, Associate Vice President for
Institutional Advancement and Dean
of Student Life
122 Anderson Hall
785-532-6237

Carla Jones, Director and Associate Dean of
Student Life
Jon Kulaga, Assistant Dean of Student Life
102 Holton Hall
785-532-6432

Student life services, including Admissions, Student Financial Assistance, Greek Affairs, Housing, K-State Student Union, New Student Services, Recreational Services, Registrar, and the Associate Dean of Student Life Office, are coordinated and directed by the associate vice president and dean. These units meet the needs of prospective and enrolled students.

The Office of Student Life is responsible for student activities, student government, and the administration of the judicial program for nonacademic misconduct. Adult Student Services, Religious Affairs, Women's Center, and the International Student Center are supervised and supported by this office. Staff members coordinate assistance to students and families in times of personal crisis and are available to students for general advice, counsel, and assistance with personal problems.

Recreational Services

Raydon H. Robel, Director
785-532-6980

Recreational Services is responsible for the intramural, recreational sports, and fitness programs for the campus.

The recently expanded Chester E. Peters Recreation Complex features 14 racquetball courts; two squash courts; three gyms for basketball, volleyball, and badminton; two weight training and cardiovascular areas; a large multipurpose area for exercise sessions, two indoor running/walking tracks; a combatives area; a table tennis room; locker rooms; and central services area for equipment checkout.

The natatorium at the Ahearn Sports Complex offers two 25-yard pools and one diving pool. A sun deck is also available.

Intramural sports are the scheduled competitive activities. Teams are organized for men, women, and co-rec play from fraternities, residence halls, off-campus, and faculty/staff groups. More than 40 different intramural activities are offered for competition.

Outdoor facilities include lighted playfields; lighted tennis and 3-wall racquetball courts; and a fitness cluster with running/walking trails. Outdoor recreational equipment and camping equipment can be rented at the Outdoor Rental Center.

The department provides many student employment opportunities for lifeguards, sports officials, building supervisors, and office assistants.

Additional information and a complete schedule of hours and events is available on the campus home page.

Religious Affairs

Don Fallon, Coordinator
102 Holton Hall
785-532-6432

The coordinator of religious activities in Holton Hall provides information regarding religious activities and organizations on campus and in the community. Pastoral care and counseling are available through this office and by referral. Students may seek counseling regarding relationships, sexuality, death and loss, or other personal and spiritual concerns.

Two memorial chapels on campus, Danforth and All Faiths, are available for student worship, weddings, and private meditation.

Student Activities and Services

Gayle Spencer, Coordinator
Office of Student Activities and Services,
K-State Student Union, Ground Floor
785-532-6541
Fax: 785-532-7292

The Office of Student Activities and Services helps students identify campus activities and avenues of campus and community involvement. The office houses the Student Governing Association, Student Judicial System, University Activities Board, Student Legal Services, Consumer and Tenant Affairs, and the Student Organization Budget Office. The office also assists individuals and groups who wish to organize and register their organization on the K-State campus.

Student Government

Gayle Spencer, Coordinator of Student
Activities and Services
Office of Student Activities and Services,
K-State Student Union, Ground Floor
785-532-6541
Fax: 785-532-7292

The purpose of the Student Governing Association is to help students voice concerns, suggestions, or grievances. Every student is a member of SGA and is represented by a college council (elected by the students in each respective college), a student senator, and by the student body president and vice president. The student senators, student body president, and vice president are elected by the K-State student body.

SGA is divided into three branches: legislative, judicial, and executive. Student Senate makes up the legislative branch. It is composed of seven standing committees: academic affairs/university relations, allocations, communications, governmental relations, privilege fee, senate operations, and student affairs/social services.

The judicial branch is composed of the judicial council, student review board, student tribunal, parking citations appeals board, and the housing and dining services judicial boards.

The student body president, vice president, and cabinet make up the executive branch. The president has the responsibility to promote the general welfare of the students and acts as the official voice of the student body to the faculty, administration, and public.

Student organizations

More than 350 organizations are available to students, faculty members, staff, and community members.

Any organization desiring to become a registered organization must register with the Universities Activities Board. UAB is the governing board for campus organizations at K-State. Registered groups have the opportunity to request funds from SGA, have fundraising activities on campus, and may schedule rooms and tables in the K-State Student Union as well as most campus facilities. UAB organizations may also post notices in university buildings and on campus bulletin boards.

University Counseling Services

Fred Newton, Director
232 Lafene Health Center
785-532-6927
http://www.ksu.edu/ucs

University Counseling Services is open 8 a.m. to 5 p.m. weekdays and 5 to 7 p.m. on Tuesdays.

Professional counselors, psychologists, and a psychiatrist are available to assist K-State students. Individual, couple, and/or group counseling is offered for people wishing to discuss academic, career, or personal concerns. Psychological testing may be used as an adjunct to career or personal counseling.

Counseling is a confidential service. Anything you say to a counselor, the fact that you used this service, or test results will not be disclosed to other persons or agencies within or outside the university, within ethical limitations. No information about counseling goes on your academic record.

University Counseling Services is funded in part by the student health fee. Students receive some initial individual sessions without charge per year. A nominal fee is charged for additional services. Lafene Health Center eligibility fees for spouses and non-enrolled summer students do not apply to UCS.

Programs using a workshop or seminar format are offered to enhance personal growth and skill development. These may include stress management, biofeedback, career life planning, assertiveness training, relationship enhancement, responsible drinking, and ACOA support. A Career Life Planning course is offered for academic credit.

The University Counseling Services staff, and the APA-accredited internship training program in psychology, adhere to the ethical code of the American Psychological Association.

Upward Bound

Reginland McGowan, Director
202a Holton Hall
785-532-6497

This federally funded program provides academic and personal counseling and guidance to disadvantaged high school students from Topeka and in Pottawatomie, Riley, Geary, and Saline Counties. Designed to motivate students with academic potential and prepare them for postsecondary programs of education in the fields of math and science, the Math and Science Initiative provides participants with academic, social, cultural, and vocational activities and experiences during the school year and with a summer campus residential program.

Women's Center

Susan L. Allen, Interim Director
206 Holton Hall
785-532-6444

The Women's Center works with individual students and the K-State community to promote the well-being of K-State students through gender-related advocacy, programming, training, information, and referral services. Our goals are to raise the level of awareness and understanding of issues relevant to women; motivate both women and men toward greater involvement in circumstances that adversely affect women; and empower women to find and explore options in their lives.

The center works closely with other offices and agencies to help women who are in crisis for reasons of domestic and sexual violence, harassment, and other forms of abuse. We provide free self-defense courses for women students each semester, share a video library on gender-related topics with groups and classes, and publish the newsletter, *Women's Circle*, as a means of informing and building a sense of community among the 2,300-plus women faculty and staff on campus and around the state.

Auxiliary Services and Facilities

Alumni Association

Amy Button Renz, President
KSU Foundation Center
2323 Anderson, Suite 400
785-532-6260

The Kansas State University Alumni Association is a 35,000-member organization. It is an independent group of alumni and friends devoted to the university.

The nonprofit organization supports K-State through student recruitment programs, maintenance of records on more than 146,000 alumni and friends, publication of the *K-Stater*, sponsorship of alumni gatherings, Homecoming, and class reunions.

Affirmative Action

Clyde Howard, Director
214 Anderson Hall
785-532-6220

The Office of Affirmative Action is available to students on matters of equal opportunity in admissions, access to programs and activities, and employment to due race, color, religion, national origin, sex, sexual orientation, disability, or age. Students with concerns about racial/ethnic harassment or sexual harassment may also contact the office.

Child Care

KSU Child Development Center

Lorna Ford, Director
200 Jardine Terrace, Building L-9
785-539-1806

The KSU Child Development Center is a nonprofit corporation serving the child care needs of K-State students, faculty, and staff. It is fully licensed by Kansas and is professionally staffed.

The center offers full-day programs for toddlers (ages 12 months and walking through 2½), preschoolers (ages 2½ through 5), and school-age children (ages 5–12). Limited part-time program spaces are offered to families of toddler and preschool children who need regular flexible care. The center is open all year offering care Monday through Friday from 7 a.m. to 5:30 p.m.

School of Family Studies and Human Services

Mary DeLuccie, Director of Early Childhood Programs
Justin Hall
785-532-5510

This school operates two early childhood facilities. Both are licensed by the Kansas State Department of Health and Environment and accredited by the National Academy of Early Childhood Programs. Enrollment in these programs is open to members of the K-State and Manhattan communities.

The Hoeflin Stone House Child Care Center is on the northeast edge of campus. The center provides full day care for 30 children ranging in age from 18 months to 5 years. Priority is given to children of working parents. The program focuses on the children's developmental needs and interests.

The Early Childhood Laboratory on the east edge of campus hosts an interagency program with USD 383. The facility integrates children who have disabilities with nonhandicapped children, and accommodates an age range from 3 to 5 years in a part-day program.

The activities and environment at both facilities are designed to foster children's cognitive, language, social, emotional, and physical growth and development.

Computing and Network Services

Kenneth Conrow, Interim Director
16 Nichols Hall
785-532-6311 Main office
785-532-7722 Computing Information Center
Fax: 785-532-5914
E-mail: cns@ksu.edu

Computing and Network Services supports K-State's academic, research, and public-service activities by providing computing resources for students, faculty, and staff.

The department provides access to several computer networks, including the Internet. These networks allow K-Staters to communicate electronically and to access information at other educational and research institutions worldwide.

CNS maintains a fiber-optic campus network that connects K-State's buildings. By providing file-sharing and electronic-communication capabilities, the network facilitates campuswide communication and information sharing. It also allows quick access to K-State's university-wide computing systems, many departmental computers, public printing facilities, and the university's World Wide Web home page. In addition, many programming languages and applications packages are available on the campus network.

The Computing Information Center in 9A Fairchild Hall has a list of CNS facilities and services, which include:

- Free computing accounts on K-State's central computing system allow access to electronic mail, file transfers, and the Internet. Accounts are available to all students, faculty, and staff; are nontransferable; and are not to be used for monetary gain or for business activities.
- University computing labs give users access to IBM-compatible and Macintosh microcomputers, Unix workstations, and printing facilities.
- Free lectures provide an overview of campus computing topics such as Unix operating systems, electronic editors, electronic mail, World Wide Web, and networking tools.
- User assistance is available 8:30 a.m. to 5 p.m. Monday through Friday when classes are in session. Walk-in contact is provided at the Computing Information Center, 9A Fairchild Hall, but users may also call 532-7722 or send electronic mail to *consult@ksu.edu.*
- K-State's World Wide Web site, contains calendars of campus events, weather data, line schedules and a closed-class list, job listings and employment information, K-State news and events, university policies and publications, links to college and departmental web pages, and a variety of other information.

All computer users are expected to follow normal standards of ethics and polite conduct in their use of the computing resources. The university guidelines for acceptable computer use are available on paper and on the web at: *http://www.ksu.edu/uauc/docs/usage.html.*

Family Center

Stephan R. Bollman, Director

Nancy T. O'Conner, Director
Marriage and Family Therapy Clinic
Campus Creek Road
785-532-6984
Fax: 785-532-6523

The Family Center provides applied educational experiences to students while offering family-related educational outreach, therapy, and consultation services to the Manhattan community and the state. The Family Center provides an interdisciplinary focus with faculty participation from different disciplines.

Students, under faculty supervision, offer services involving marriage and family therapy and family life education. Affiliated programs include the State Training Office for Kansas Child Care Training Opportunities and Cultural Competency grants from Social and Rehabilitation Services. Special workshops address particular family topics, including single parenting, parent education, and family life. The annual National Rural Families Conference features the Ruth Hoeflin Forum on Family Issues.

Services are available to students and the general public. A fee is assessed for services based on a sliding fee scale.

Foundation

Gary Hellebust, President and CEO
KSU Foundation Center
2323 Anderson, Suite 500
785-532-6266, 785-532-7505

The Kansas State University Foundation, the official fund-raising arm of the university, is a nonprofit organization certified under Section 501 (C) (3) of the IRS Code of 1954. The purpose of the Kansas State University Foundation is to encourage, receive, and hold in trust any real and personal property given for the use of K-State faculty and students; and to invest or disburse, manage, administer and control all such gifts to provide those services to the university that are not or cannot be provided through appropriated funds or student fees. The KSU Foundation acts as the custodian for gifts to the university and is encouraged to receive and hold in trust any real and personal property given for the use of K-State, and to administer and control all the gifts to provide services that are not or cannot be provided through appropriated funds.

Although the KSU Foundation is not a bank, it offers many of the same services and is responsible for the administration of more than 3,000 fund accounts and the processing of 60,000 gifts annually, while administering total assets of $187 million. Policy is formulated by a 175-member board of trustees and an executive committee of 15 members to which the staff, directed by the president, is responsible.

IDEA Center

Bill Pallett, Director
1615 Anderson Avenue
785-532-5970

The IDEA Center provides services and products to improve teaching and learning from both individual and programmatic perspectives. The center serves both K-State and the broader academic community.

At K-State its primary function is the coordination of the assessment of all on- and off-campus programs (basic skills, major fields, general education).

Information Systems

John W. Streeter, Director
2323 Anderson Avenue, Suite 215
785-532-6281

Data and information systems administration for the university are provided by the Office of Information Systems. Services consist of data administration, database administration, systems project planning, application software development, systems integration, operational systems support, systems analysis and applications programming, and a user helpdesk hotline.

Major application systems include student prospect, admissions, student financial assistance, registration, academic progress, employment, financial, property, and related records. Systems and databases are operated on the university's central mainframe and distributed processors in the client/server environment including database servers, specialized application servers, LAN servers, workstations, and personal computers.

COBOL and CA-ADS/O are the principal programming languages used in applications development and support on the mainframe. Mainframe database services are provided by CA-IDMS in the MVS environment and IBI-FOCUS in the VM environment.

Fourth-generation languages and applications development tools such as PeopleTools, PowerBuilder, Oracle Developer 2000, and PERL are used in applications development and support in the client/server environment. Distributed database services are provided by Oracle 7.

Institutional Advancement

Robert S. Krause, Vice President
122 Anderson Hall
785-532-5942

The vice president for institutional advancement is responsible for the external relations of the university and is the chief student affairs officer. Additionally, the vice president coordinates ongoing activities with the KSU Foundation, K-State Alumni Association, and Department of Intercollegiate Athletics, and external relations with governmental agencies, the Kansas Board of Regents, and other university constituents. The vice president for institutional advancement reports directly to the president and serves as chief spokesperson for the university.

Libraries

Brice Hobrock, Dean of Libraries
Hale Library
785-532-6516

Kansas State University Libraries provide support for the educational, research, extension, and public services objectives of K-State. The libraries' staff is responsible for acquiring, maintaining, and providing access to collections of materials requisite to the university's program requirements. Librarians at K-State are dedicated to organizing, promoting, and interpreting the collections for the university community and Kansas citizens.

Hale Library is the central unit of the university library system. It is supplemented by three specialized subject libraries: Weigel Library of Architecture and Design (Seaton Hall), Math/Physics (Cardwell Hall), and Veterinary Medical (Veterinary Medical Teaching Building).

The libraries contain more than 1.4 million volumes and that number is increasing at an annual rate of about 25,000 volumes. Current journal and serials subscriptions total 8,800. In addition to the volumes cataloged according to the library of Congress Classification, the libraries contain a document depository collection of U.S. government publications that numbers more than 1.3 million; about 130,000 maps; a complete archival collection of ERIC (Educational Resources Information Center) documents; and more than 4 million pieces of microforms. Audiovisual materials number approximately 50,000 items and include sound recordings, tapes, slides, and printed music scores. A collection of more than 200 newspapers is maintained from Kansas communities, major U.S. cities, and other countries.

Specialized collections and the university archives contain a variety of old, rare, and unusual books, manuscripts, and other materials. The archives offer an assortment of published and unpublished material, including photographs, documenting K-State history. The Minorities Resource and Research Center is a special collection of materials by and about Blacks, Hispanics, and Native Americans. The juvenile literature collection numbers about 12,000 volumes of children's books and is used primarily by students in teacher education.

The reference units, located on the first and second floors of Hale Library, are the service centers of the system. They provide traditional reference service as well as computerized information retrieval from more than 200 online and compact disc databases. Staff members are available to help students, faculty, and others find the information they need. Terminals for Voyager, the libraries' online catalog, are located here, throughout Hale, and in the branch libraries.

Other areas of Hale Library contain collections and provide services to students. These include reserves/copy center, microforms/periodicals, government documents, interlibrary loan, and circulation units. ISSA, Information and Support Services for Agriculture, provides information to developing nations on postharvest handling of cereal grains and legumes, and research information about developing countries.

A science library is located on the first floor of the Hale Library.

To take advantage of the library resources in the region, the Regents Libraries operate a daily courier service between all Regents libraries. The Regents libraries are connected through OCLC, a nationwide computerized cataloging and interlibrary loan network, as well as their individual online catalogs. All Regents libraries allow direct borrowing by students and faculty.

Police Department

108 Edwards Hall
785-532-6412 business
911 emergency
http://www.ksu.edu/police

The University Police Department is responsible for the protection of all properties owned and operated by the state educational institution or its affiliates. This authority is granted under state law. While service to the K-State community is of great concern to the department, the prevention of crime and investigation of all reported crimes is also of prime importance.

The department assists with parking control and enforces traffic regulations. Traffic and parking regulations are established by a student-faculty/staff Traffic and Parking Council, by authority of K.S.A. 74-3211.

The department is responsible for providing physical security on campus property. This includes opening and closing buildings and monitoring security cameras. The department also answers and responds to 33 emergency telephones strategically located throughout the university.

The University Police Department is open 24 hours a day. It provides a contact for emergency repairs and acts as the university operator outside normal business hours. The department has sworn police officers on duty 24 hours a day.

Postal Service

Contract Post Office
113 Dykstra Hall
785-532-6306 (messages only, clerk will return call)

Central Mail Services
Located north of Dykstra Hall
785-532-7751 (distribution of all interdepartmental and metering of departmental outgoing mail)
E-mail: centralmailservices@ksu.edu
http://www.ksu.edu/facilities/mailop.htm

All mail for students must be addressed to their off-campus Manhattan address or residence hall/Greek address. Postage should be applied to this mail, and it should be sent through the United States Postal Service.

Manhattan Post Office personnel deliver U.S. mail directly to university buildings and residence halls and pick up outgoing U.S. mail from various locations on the campus.

The Contract Post Office sells stamps, money orders, and other postal supplies; weighs, insures, and registers mail; and receives outgoing U.S. mail. A self-service postal unit operated by the U.S. Postal Service is located in the K-State Student Union.

Speech and Hearing Center

Julie Schraeder–Neidenthal
Director of Clinical Services
107 Leasure Hall
785-532-6879, 785-532-6873

The Speech and Hearing Center provides evaluation, management, and consultation services to university students with articulation, fluency, voice, language, or hearing impairments. These clinical services are also available to children and adults of the surrounding communities. The center provides educational and clinical experiences for students preparing for careers in speech-language pathology and audiology.

Student Publications

Ron Johnson, Director
103 Kedzie Hall
785-532-6555

Student Publications Inc. is a nonprofit corporation that publishes the daily student newspaper, the *Kansas State Collegian;* the student yearbook, the *Royal Purple;* and the phone book. Student Publications is governed by the Board of Student Publications, composed of five students elected by the student body annually, three students elected by the student staff of Student Publications, two faculty members appointed by the university president, and the director of the A.Q. Miller School of Journalism and Mass Communications.

The Board of Student Publications names an editor in chief and advertising manager of the *Collegian* three times each year, for fall, spring, and summer semesters. The *Royal Purple* editor is chosen in the spring for the following year. The editors and advertising managers hire students for staff positions.

The *Collegian* and *Royal Purple* each have faculty advisors, but their content is determined and controlled solely by the editors and student staffs.

Telecommunications Services

Fred Damkroger, Director
109 East Stadium
785-532-7001

Telecommunications provides the voice, data, and video transmission capabilities for the university. The department provides approximately 6,000 telephones lines to university departments and 2,000 lines to the student residence halls.

Four PBX switches, linked together by leased lines, connect the main campus in Manhattan, the Foundation Center, and the manufacturing learning center with the Salina campus. Fiber optic cables connect remote modules of the main campus PBX switch and carry data to all academic buildings and residence halls.

The department provides long distance service to students living in the residence halls. An authorization code assigned to each student identifies the caller and ensures proper billing. Voice mail, call waiting, and other advanced features of the system are also available to students in the residence halls. Authorization codes are also available for faculty and staff for personal long-distance calls.

Connections to the state KANS-A-N network provide long-distance service to all departments along with facilities provided by other long distance carriers.

The campus paging system and all radios on campus are the responsibility of the department. The Office of Telecommunications provides the service for all wiring additions, moves, and changes to all existing and new buildings.

University Press of Kansas

Fred M. Woodward, Director
2501 W. 15th
Lawrence, Kansas 66049–3905
785-864-4154

Kansas State University, in association with the other five Regents' universities, operates and supports the University Press of Kansas for the purpose of publishing scholarly and regional books on a nonprofit basis. The press is governed by a board of trustees composed of the chief academic officers of the sponsoring institutions.

University Relations

John Fairman, Assistant Vice President for University Relations
122 Anderson Hall
785-532-6269

University Relations is responsible for licensing activities related to the institution's name and logos, and coordinates public information for K-State activities and events through University Relations and its four units: News Services, Photographic Services, Printing Services, and University Publications.

News Services is the official outlet for print and broadcast news materials relating to K-State policies and administration. News Services also publishes *In-View*, the official faculty-staff newsletter.

Photographic Services offers photoprocessing, location and studio photography, and slide reproduction.

Printing Services prints books, brochures, business cards, envelopes, letterheads, posters, and other printed matter. Second- and third-class mailing services are available to all departments and affiliated organizations.

University Publications provides editing, design, and production coordination of enrollment management, recruitment, and informational publications.

International Programs

William L. Richter, Associate Provost for
International Programs
304 Fairchild Hall
785-532-5990
Fax: 785-532-6550
E-mail: wrichter@ksu.edu
http://www.ksu.edu/oip

Building upon several decades of international involvement, K-State provides a range of programs that link the campus with other parts of the world. Many of these are coordinated through individual departments or colleges; others serve the whole university.

The Office of International Programs is the primary central unit responsible for coordinating K-State's various international programs. The office supervises the Study Abroad Program and the English Language Program, and it provides a range of services and support to faculty and students. Coordination is assisted by an International Activities Council that is broadly representative of the university.

Study Abroad Programs

Barry H. Michie, Director
304 Fairchild Hall
785-532-5990
Fax: 785-532-6550
E-mail: sikarraj@ksu.edu
http://www.ksu.edu/oip/study_abrd
/study_abroad.html

The Study Abroad Program offers a variety of international exchange options for students in almost 200 locations and on every continent. Available programs range in length from a summer or semester to a full year. K-State participates in two large exchange networks: the International Student Exchange Program (ISEP) and the MAUI-Utrecht Exchange. K-State also has bilateral exchanges with three dozen universities. A cooperative agreement through Mid-America Universities International (MAUI) allows students to participate in programs offered by other MAUI institutions. K-State also has links to such programs such as Council for International Educational Exchange (CIEE) and Semester-at-Sea.

K-State also offers students a wide variety of credit and noncredit learning opportunities abroad through study tours and more extended group abroad programs. Most programs are led by K-State faculty and are coordinated by the study abroad office in cooperation with academic departments. Examples include the Department of Architecture spring semester in Italy, the Spanish summer language program in Mexico, and study tours to Europe, Asia, Africa, and Latin America. The coordinator of group study abroad assists faculty to development programs and counsels students on foreign learning opportunities.

Scholarships for study abroad

Students are encouraged to apply for a range of scholarships administered by the study abroad program.

- Heather Stewart Memorial Scholarship
- Doris Hays Fenton Memorial Scholarship
- Barton-Dobenin Scholarship
- Vernon Larson Study Abroad Scholarship
- Catherine Joyce Memorial Scholarship
- German-Swiss Scholarship
- James B. Pearson Fellowship
- National Security Education Program

Scholarships available through other offices include:

Rhodes, Truman, Marshall
Beth Powers
785-532-6900

Fulbright
Walter Kolonosky
785-532-6760

Modern languages (majors only)
Carol Miller
785-532-1922

Blue Key
102 Holton Hall
785-532-6432

Rotary Ambassador
Jerry Weis
785-532-6606

Barton–Dobenin Study Abroad Fellowship
College of Business Administration (majors only)
785-532-6190

Marc Johnson International Studies Scholarship
Larry Erpelding (agriculture majors only)
785-532-6151

International Students

See the Admission and International Student Center sections of this catalog.

English Language Program

Enid Cocke, Director
205 Fairchild
785-532-7324
http://www.ksu.edu/elp

The English Language Program offers intensive English courses primarily for international students who plan to enter degree programs at K-State. However, it also accepts students who wish to come for English instruction only.

The program offers five levels of full-time intensive English. It also offers an advanced part-time course specifically for undergraduate students. This course provides continued instruction and support in English while students take up to 6 hours in their degree field.

Undergraduate applicants who are academically qualified but don't yet have the required English proficiency may be offered conditional admission. These students apply to the English Language Program and receive an I-20 form to cover both their English study and the time they will spend earning their degree. They study in the English Language Program until they earn the required TOEFL score or earn the recommendation of the program.

The program also screens the English proficiency of incoming non-native speakers of English. Students with a TOEFL score between 550 and 600 are tested, and some are placed in ENGL 075, a support course in Written English for International Students.

For other information and a brochure, write the English Language Program at the address above.

International and Area Studies Programs

Bradley Shaw, Director
215 Eisenhower Hall
785-532-1988
Fax: 785-532-7004
E-mail: bradshaw@ksu.edu
http://www.ksu.edu/ias

Students interested in world affairs may take advantage of several interdisciplinary opportunities. The College of Arts and Sciences offers two secondary majors, international studies and Latin American studies, to undergraduates. For more information, see the Secondary Majors section of this catalog or visit the website.

In addition to a variety of courses that focus directly on international topics, students have the opportunity to work with faulty who have considerable expertise through their own international research and experience. Guest lecturers, visiting scholars, special seminars and conferences provide opportunities for students and faculty to learn of new developments in the international arena and to appreciate the global dimension of activities in our state and nation. Many colleges offer special programs, including group study abroad opportunities. Students may study a variety of foreign languages in support of international studies or to qualify for research and internship opportunities.

For information about ongoing projects, or about scholars who are international area or subject specialists, contact the Office of International Programs, director of international and area studies, or the following:

International Agricultural Programs
Robert Hudgens
785-532-7034

International Trade Studies
Mark Parillo
785-532-6730

Department of Marketing and International Business
David Andrus
785-532-6010

Department of Modern Languages
Michael Ossar
785-532-6760

International Community Service Program

Carol Peak, Director
Edwards Hall
785-532-5701
Fax: 785-532-0671
E-mail: ksuserve@ksu.edu

Since 1990 the K-State Community Service Program has placed teams of students abroad to work on service projects for the benefit of their host communities. Past project countries have included Costa Rica, Dominican Republic, Paraguay, Mexico, El Salvador, Jordan, and India. Projects are normally 8 to 10 weeks during the summer. Participants are chosen in the fall semester prior to the project and enroll in a preparatory course during spring semester. The Community Service Program also has summer service projects in Kansas communities, many of which include international participants.

International Development Programs

The Office of International Agricultural Programs, the Food and Feed Grains Institute, the International Grains Program, the International Meat and Livestock Program, the Human Ecology Paraguay Project, and other units maintain projects abroad, provide short-term consultants, and provide short-course training for foreign visitors.

K-State is a member of the MidAmerica International Agricultural Consortium and the Association of Big Twelve Universities, through which collaborative development projects are pursued.

International Agricultural Programs
Robert Hudgens, Assistant Dean, Agriculture
785-532-7034

International Community Service Program
Carol A. Peak, Director
785-532-5701

International Grains Program
Brendan Donnelly, Director
785-532-6161
John Howard, Associate Director
785-532-6161

International Meat and Livestock Program
Scott Schaake
785-532-6533
Janice Swanson
785-532-6533

International Sorghum and Millet Program
Robert Hudgens
785-532-7034

Food and Feed Grains Institute
Roe Borsdorf, Associate Director
785-532-4056

Information Support Services for Agriculture (ISSA)
Donna Schenck-Hamlin, Director
785-532-7452

Mid-America International Agricultural Consortium
Robert Hudgens
785-532-7034

Mid-America Universities International (MAUI)
William L. Richter
785-532-5990

Wheat Research Center
Ron Madl, Director
785-532-7022

Secondary Majors

K-State offers secondary majors in American ethnic studies, gerontology, industrial and labor relations, international studies, Latin American studies, natural resources and environmental sciences, and women's studies. Open to students in all colleges, these secondary majors are designed to be taken concurrently with a primary major. Most programs of study will allow students to take both a primary and a secondary major within the normal four-year program, especially because courses applied toward the secondary major may also satisfy requirements for general education or restricted electives.

Program requirements follow a common pattern. Each includes two or more of the following features: an interdisciplinary introductory course (which might also satisfy distribution requirements); a list of electives from which students choose about 18 hours; and an interdisciplinary senior seminar featuring supervised independent study.

Each program has a supervisory committee and a director to whom students may refer for advising.

American Ethnic Studies

Juanita McGowan, Ph.D., Director

Professors Boyer,* Fedder,* Finnegan,* McElroy,* O'Brien,* H. Ottenheimer,* Prins,* Rappoport,* and Suleiman;* Associate Professors Armagost,* D. Benson,* J. Benson,* Cochran,* L. Kremer, * A. Pigno, Rodgers,* Sherow,* and Wigfall;* Assistant Professors Baird-Olson,* Davis, Davy, McGowan, Watson, and Webb;* Emeritus R. Taylor.

The American ethnic studies program primarily focuses on African Americans, Asian Americans, Hispanic Americans, and Native Americans, but includes the study of other ethnic groups in the United States as well. The courses in the program meet the educational and career needs of students by preparing them to function intellectually in a multiethnic, multicultural nation and world.

Students are encouraged to enroll in American ethnic studies courses whether or not they select the option of a secondary major in American ethnic studies.

Secondary major

Students completing 24 semester hours of course work in a minimum of two departments may earn a secondary major in American ethnic studies. The director assists and advises secondary majors in planning appropriate schedules.

Course requirements

Foundation courses

AMETH 160	Introduction to American Ethnic Studies	3
ANTH 200	Introduction to Cultural Anthropology	3
or ANTH 210		

Area courses

Fifteen hours of area courses are required. The distribution of area courses must include at least two American ethnic groups and at least one general/comparative course. No course can be used to fulfill more than one major requirement.

A. African American, Asian American, Hispanic/Latino American, and Native American ethnic groups of the United States	9
B. Background/ancestral cultures of category A	3
C. Any United States ethnic group or the ancestral culture of a United States ethnic group	3

Capstone course

AMETH 499	Senior Research Project in American Ethnic Studies	3
Total credits required		24

Minor

Students completing 15 semester hours of course work in a minimum of two departments may earn a minor in American ethnic studies. Students pursuing a minor are advised in the American ethnic studies office.

Course requirements for the minor

AMETH 160	Introduction to American Ethnic Studies	3
ANTH 200	Introduction to Cultural Anthropology	3
or ANTH 210		
3 American ethnic studies electives in category A as described in the catalog and the AMETH handbook		9
Total credits		15

Interdisciplinary courses

◆**AMETH 160. Introduction to American Ethnic Studies.** (3) I, II. This course introduces students to the major concepts related to ethnicity and to some of the major American ethnic groups.

AMETH 460. Independent Reading and Research in American Ethnic Studies. (1–3) I, II, S. Guided reading and research on a specific topic of student interest, leading to preparation of a research paper or creative work. Topic and credit to be arranged. Pr.: AMETH 160, at least one other American ethnic studies course and permission of instructor.

AMETH 499. Senior Research Project in American Ethnic Studies. (3) I, II, S. Guided research in American ethnic studies. Students prepare a research paper on a relevant subject of their choice. Each student is responsible for arranging to work with a member of the American ethnic studies faculty. Pr.: AMETH 160.

AMETH 501. Recitation Leadership. (0–3) I, II. Integrative review of concepts in American ethnic studies under faculty supervision. Preparation for leading discussions, workshops and reviews in American ethnic studies. Students attend two lecture sessions per week concurrent with AMETH 160, one additional seminar session focused on planning and preparation for recitations, and are responsible for leading discussions in one or more recitation sections in AMETH 160 per week. May be repeated for a maximum of 6 hours credit.

AMETH 560. Topics in American Ethnic Studies. (1–4) I, II. Selected topics of special interest in American ethnic studies. Repeatable with change of topic. Pr.: AMETH 160.

AMETH 660. Independent Reading and Research in American Ethnic Studies. (1–3) I, II, S. Advanced reading and research on a specific topic of student interest, leading to preparation of a research paper or creative work. Topic and credit to be arranged. Pr.: Senior or graduate standing and permission of instructor.

Area courses

A. African American, Asian American, Hispanic American, and Native American

General

EDCEP 886	Multicultural Counseling
EDCIP 455	Teaching in a Multi-Cultural Society
EDCIP 733	Curriculum Materials for Ethnic Diversity
EDCIP 730	Education of the Disadvantaged
ENGL 280	American Ethnic Literature
ENGL 655	Readings in American-Ethnic Minority Literature
MC 530	Media, Race, and Social Change
POLSC 616	Discrimination and the Law
PSYCH 557	Psychology of Ethnic Humor
SOCIO 570	Race and Ethnic Relations in the U.S.A.
THTRE 672	American Ethnic Theatre

African American

ANTH 517	African American Music and Culture
ANTH 536	African American Cultures
ENGL 395	Topics: Contemporary Afro-American Fiction
ENGL 399	Topics in Contemporary African American Literature
FSHS 652	Black Families
HIST 529	Civil War and Reconstruction
HIST 539	African American History
HIST 554	History of the South
MUSIC 420	History of Jazz
MUSIC 424	Jazz in Kansas City and the Southwest
MUSIC 425	Topics in Jazz
KIN 703	Minority Groups in Sports
POLSC 616	Discrimination and the Law
SPCH 450	Female Slave Rhetoric

Asian American

ANTH 524	Topics: New Immigrants

Hispanic/Latino American in the U.S.

SPAN 569	Special Studies: Chicano Language and Literature

Native American

ANTH 533	Indians of Kansas
ANTH 630	Indigenous People and Cultures of North America
ART 662	Southwestern Indian Arts and Culture
HIST 537	History of the Indians of North America
LING 594	Comanche Texts

B. Background/ancestral cultures of African American, Asian Americans, Hispanic American, and Native American ethnic groups of the United States.

African

ANTH 550	Cultures of Africa
ANTH 517	African American Music and Culture
ANTH 536	African American Cultures
POLSC 626	African Politics

Latin American

ANTH 634	Indigenous Peoples and Cultures of Latin America
ANTH 673	Mesoamerican Archaeology
GEOG 620	Geography of Latin America
HIST 560	Latin American Nations
HIST 561	Colonial Hispanic America
HIST 562	Modern Mexico
POLSC 622	Latin American Politics

SPAN 563	Introduction to the Literature of Spanish America
SPAN 566	Hispanic American Civilization
SPAN 752	Contemporary Spanish American Narrative
SPAN 772	Hispanic World Today

Native American

ANTH 570	North American Indian Archaeology

C. Any United States ethnic groups and the ancestral cultures of those groups (all the courses listed under categories A and B, along with the following)

General

ANTH 220	Introduction to Linguistic Anthropology
ANTH 516	Ethnomusicology
ANTH 519	Applied Anthropology
ANTH 676	Old World Archaeology
ANTH 685	Race and Culture
BIOL 320	Economic Botany
ENGL 460	American Folklore and Folk Literature
ENGL 580	Selected World Literature
GEOG 100	World Regional Geography
GEOG 640	Geography of Europe
HIST 582	Modern Eastern Europe
KIN/SOCIO 435	Sport in Contemporary Society
POLSC 602	Class, Power, and Public Policy
POLSC 629	Development Policy and Administration
PSYCH 535	Social Psychology
SOCIO/SOCWK 510	Social Welfare as a Social Institution
SOCWK 545	Wealth, Power, and Privilege
SOCIO 840	Comparative Social Systems

Asian

ANTH/ECON/GEOG/HIST/POLSC/SOCIO 505 and 506	Introduction to the Civilizations of South Asia I and II
ANTH 545	Cultures of India and Pakistan
GEOG 680	Geography of Asia
POLSC 511	Contemporary Chinese Politics
POLSC 623	South Asian Politics
POLSC 625	Southeast Asian Politics
POLSC 652	International Politics of South Asia
SOCIO 742	Society and Change in South Asia

French

FREN 510	Modern French Culture
FREN 514	French Civilization

German

GRMN 530	German Civilization

Jewish

ENGL 280	American Ethnic Literature: Holocaust Literature
ENGL 515	Literature and Society: Literature of the Holocaust
HIST 596	Holocaust: The Destruction of the European Jews

Middle Eastern

ARCH 601	Topics: Architecture and Urbanism of the Middle East
POLSC 624	Middle Eastern Politics
POLSC 653	International Politics of the Middle East

Russian

GEOG 650	Geography of Former Soviet Lands
HIST/RUSSN 250	Russian Culture and Civilization
HIST 564	The Russian Revolution and the Soviet System
HIST 591	History of Russia to 1801
POLSC 627	Eastern and Central European Politics
POLSC 630	Politics of Russia and Former Soviet Lands

◆University general education credit.

Credit and content

All courses regularly offered for American ethnic studies credit have at least 40 percent or a major focus of content concerned with American ethnic groups, their ancestral cultures, or American ethnicity. Instructors and students of courses not regularly included in the American ethnic studies program may petition for credit on the basis of the same criteria.

Examples of specific courses for which the granting of American ethnic studies credit may vary are the following:

ANTH 420	Ethnography of Language
SOCIO 541	Wealth, Power, and Privilege
SOCIO 741	Social Differentiation and Stratification

In addition, departments offer courses on special topics, seminars, pro seminars, honors seminars, and independent studies that may apply for credit.

Relevant K-State-validated courses of transfer students will be accepted for American ethnic studies credit upon validation by the American Ethnic Studies Governance Board.

Gerontology

Lyn Norris–Baker, Director
Center for Aging
203 Fairchild Hall
785-532-5945

The rapid growth of an older population in the United States is creating an increasing demand for personnel who possess specialized training in gerontology in a variety of occupations and professions.

The secondary major in gerontology is a 24-hour program of study. It includes two required courses, Introduction to Gerontology and Seminar in Gerontology, and 18 semester hours from the approved list of gerontology electives offered in participating departments. Elective courses must be taken in a minimum of three separate departments.

Along with the secondary major, students can take an emphasis in long-term care administration. This emphasis requires completing the secondary major in gerontology, ACCTG 231 Accounting for Business Operations[1], MANGT 420 Management Concepts, an approved 480 clock-hour internship (6 credit hours, GERON or DHE 615), GERON 610 Seminar in Long-Term Care Administration, and at least one course in each of 10 training code areas as defined by the Kansas Board of Adult Care Administration. The adult care codes are listed in the advising guide available at the Center for Aging. With planning, the emphasis can be completed within 27 credit hours and a 6-credit-hour internship. Courses listed below will carry credit in the gerontology studies program and new courses will be added to the program as the curriculum is updated.

Interdisciplinary courses

GERON 315. Introduction to Gerontology. (3) I. Multidisciplinary introduction to the field of aging. Examines social, psychological, developmental, organizational, and economic aspects of aging. Theoretical, methodological, and applied issues of aging related to contemporary American society. Pr.: None.

GERON 600. Seminar in Gerontology. (3) II. An interdisciplinary course organized topically, with students presenting papers on aging-related issues that draw upon the students' previous and concurrent academic experience. Provides supervised independent study and subsequent discussion, allowing students to integrate and order their perceptions about gerontological issues. Pr.: Completion of 15 hours of course work in gerontology.

GERON 610. Seminar in Long-Term Care Administration. (3) (Offered Intersession only) Administration principles involved in the planning, organizing, and directing of long-term care agencies. Includes an in-depth exposure to federal and state standards and regulations governing long-term care.

GERON 615/DHE 615. Long-Term Care Administration Internship. (6) Includes: (a) field experience in the general administration of long-term care programs and/or facilities: planning, budgeting, program management, and service delivery; (b) exposure to federal and state standards and regulations governing long-term care; and (c) professional leadership development. Pr.: Junior standing, 15 hours of gerontology, MANGT 420, ACCTG 231, GERON 610, and GPA of 2.5 or above (3.0 or above in long-term course administration coursework).

GERON 620. Problems in Gerontology. (1–3) Independent study of selected problems. Pr.: Background of courses required for problem undertaken and consent of instructor.

Departmental course electives

See the appropriate college sections of this catalog for further description.

College of Agriculture

Horticulture

HORT 525	Horticulture for Special Populations	3

College of Architecture, Planning, and Design

Architecture

◆ARCH 730	Environment and Aging	3
ARCH 740	Building Related Health and Safety[4]	3

Landscape architecture/regional and community planning

PLAN 315	Introduction to Planning	3[4]
PLAN 715	Planning Principles	3[4]
PLAN 761	Community Development Workshop	3[4]

Interior architecture

IAR 730	Facility Management	3[4]

College of Arts and Sciences

GERON 315	Introduction to Gerontology	3
GERON 600	Seminar in Gerontology	3[2]
GERON 610	Seminar in Long-Term Care Administration	3[2]
GERON 615	Long-Term Care Administration Internship	3[2]
GERON 620	Problems in Gerontology	3

Biology

BIOL 404	The Biology of Aging	3

English

ENGL 535	Literature of Aging	3

History

HIST 520	Death and Dying in History	3
HIST 534	Social History of Amcrican Medicine	3

Kinesiology

KIN 335	Physiology of Exercise	4
KIN 796	Topics in Physical Education	3[3]

Philosophy

PHILO 100	Introduction to Philosophical Problems[3]	3
◆PHILO 365	Medical Ethics	3

Psychology

PSYCH 518	Introduction to Health Psychology	3
PSYCH 520	Life-Span Personality Development	3
PSYCH 715	Psychology of Aging	3

Social work

SOCWK 566	Social Work in Aging Services	3

Sociology

SOCIO 535	Population Dynamics	3
SOCIO 744	Social Gerontology: An Introduction to the Sociology of Aging	3
SOCIO 944	Seminar in the Sociology of Aging	3

Speech

THTRE 253	Multicultural Storytelling[4]	3[4]
THTRE 563	Storytelling[4]	3[4]
THTRE 665	Drama Therapy for Special Populations	3[4]

College of Business Administration

Accounting

◆ACCTG 231	Accounting for Business Operations	3

Finance

FINAN 450	Essentials of Finance	3[5]

Management

MANGT 420	Management Concepts	3[1]
MANGT 520	Organizational Behavior	3[5]
MANGT 530	Industrial and Labor Relations	3[5]
MANGT 531	Personnel and Human Resources Management	3[5]

Marketing

MKTG 400	Marketing	3[5]

College of Human Ecology

DHE 615	Long-Term Care Administration Internship	3[2]

Clothing, textiles, and interior design

IDH 651	Designing Supportive Environments	3
◆IDH 710	Housing/Facility Management	3
IDH 725	Community Housing Needs	3

Foods and nutrition

FN 132	Basic Nutrition	3
FN 352	Personal Health	3
FN 400	Human Nutrition	3
FN 610	Life Span Nutrition	3
FN 718	Physical Health and Aging	3

Family studies and human services

FSHS 510	Human Development and Aging	3
FSHS 654	Death and the Family	2–3
FSHS 704	Seminar in Family Studies and Human Services	3[3]
FSHS 708	Topics in Family Studies and Human Services	2–3[3]
FSHS 770	Economics of Aging	3
FSHS 845	Adult Development and Aging	3

[1] Required for long-term care administration emphasis, but no credit as gerontology elective in secondary major.

[2] Required for long-term care administration emphasis.

[3] Center for Aging approval required for gerontology credit.

[4] Project approval from Center for Aging required.

[5] Credit as long-term care administration elective only.

◆University general education credit.

Industrial and Labor Relations

Stan Elsea, Management
107 Calvin Hall
785-532-4353

Clive Fullagar, Psychology
469 Bluemont Hall
785-532-6850

The secondary major in industrial and labor relations is a 25-hour interdisciplinary program of study, offered jointly by the Department of Management in the College of Business Administration and the Departments of Economics; Psychology; and Sociology, Anthropology, and Social Work in the College of Arts and Sciences. Eighteen of the hours must be taken outside the student's primary major area.

MANGT/ECON/PSYCH 330 and four additional courses are required as shown in Group I below. In addition, two elective courses must be chosen from each of Groups II and III below.

I. Required courses (16 hours)

MANGT/ECON/ PSYCH 330	Introductory Seminar	1
◆ECON 523	Human Resource Economics	3
MANGT 530	Industrial and Labor Relations	3
MANGT 630	Labor Relations Law	3
PSYCH 560	Industrial Psychology	3

II. Restricted electives

Select two courses.

ECON 540	Managerial Economics	3
MANGT 535	Personnel Law	3
MANGT 537	Industrial Conflict Resolution	3
PSYCH 564	Psychology of Organizations	3
SOCIO 546	Bureaucracy in Modern Societies	3

III. Group electives

Select two courses total from two different groups.

Group A

MANGT 531	Personnel and Human Resources Management	3
MANGT 639	Advanced Labor Relations	3

Group B

◆ECON 507	The Japanese Economy	3
ECON 620	Labor Economics	3
ECON 627	Contemporary Labor Problems	3
ECON 630	Introduction to Econometrics	3

Group C

PSYCH 559	Psychological Testing	3
PSYCH 563	Gender Issues in the Workplace	3

Group D

POLSC 616	Discrimination and the Law	3
SOCIO 450	Introduction to Social Interaction	3
SOCIO 547	Sociology of Work	3
SOCIO 570	Race and Ethnic Relations in the USA	3

◆University general education credit.

International Studies

Bradley A. Shaw, Director
215 Eisenhower Hall
785-532-1988
Fax: 785-532-7004
E-mail: ias@ksu.edu
http://www.ksu/ias

The international studies program promotes understanding of the international community. The program encourages a substantial distribution of foreign and international course work under the direct, personal guidance of an interdisciplinary faculty committee. Students must enroll in another major before taking international studies as a secondary major.

Students who complete the secondary major in international studies are expected to include the following within their areas of knowledge or competency: speaking capability in a foreign language; basic geographic knowledge of the world; ability to understand and analyze cultures other than their own; some understanding of developmental processes; some understanding of international relations and processes of interaction; and some integration of their program of study into a meaningful and coherent whole.

Requirements

Students must complete the equivalent of four semesters of a modern foreign language. They must also complete 24 hours of course work, distributed as follows:

Geographic knowledge

GEOG 100	World Regional Geography

Cultural understanding

ANTH 200, 201, or 204	Introduction to Cultural Anthropology

Development

At least one course marked D in the approved course list.

International relations

At least one course marked I in the approved course list.

Program integration

DAS 425	Senior Research in International Studies or approved alternative.

During the senior year, the student will write a research paper or complete a project on an international topic. The research may be an honors thesis or design project in one of the participating colleges, or it may involve independent study. Students may enroll in DAS 425 or in an approved alternative course. In all cases, the student must have the permission of a faculty member to supervise and evaluate the work. All students enrolled in Senior Research in International Studies must have their topics approved by the director of the secondary major in international studies.

Electives

The remaining 9 hours may be taken from the approved course listing. No more than 6 hours (of the 24) may be applied from a single discipline, and no more than 6 hours may be counted toward both a secondary major in an area studies program and in international studies. Students are encouraged to take courses in more than one college, and are required to consult with the international studies director on the design and coherence of their international studies program.

Courses listed below are representative of those for which students may receive credit in international studies. Alternative courses may be approved by petition to the program director. New program options are being planned. Note that often appropriate courses are offered under categories such as "topics," "special studies," "problems," or "seminar." For the current list of approved courses and new program developments, call or write the director, or view the list at the international and area studies website.

Interdisciplinary course

DAS 425. Senior Research in International Studies. (3) I, II. A research paper or project on an international topic. Pr.: Completion of 15 hours of course work in international studies secondary major.

Departmental electives

College of Agriculture

GENAG 505	Comparative Agriculture	1–4	
AGEC 615	International Agricultural Development	3	D
AGEC 623	International Agricultural Trade I	3	I
FOR 643	Agroforestry	2	

College of Architecture, Planning, and Design

ARCH 655	Foreign Seminar	var.	

College of Arts and Sciences

Anthropology

ANTH 220	Introduction to Linguistic Anthropology	3	
ANTH 505	Introduction to the Civilization of South Asia I	3	
ANTH 506	Introduction to the Civilization of South Asia II	3	
ANTH 508	Male and Female	3	
ANTH 510	Kinship and Marriage	3	
ANTH 511	Cultural Ecology and Economy	3	
ANTH 512	Political Organization in Folk and Nonliterate Cultures	3	
ANTH 536	African Cultures of the Americas	3	
ANTH 545	Cultures of India and Pakistan	3	
ANTH 550	Cultures of Africa	3	
ANTH 604	Culture and Personality	3	
ANTH 633	Gender, Power, and International Development	3	D
ANTH 634	Indigenous Peoples and Cultures of South America	3	
ANTH 685	Race and Culture	3	

Art

ART 628	Foreign Studies in Art History	1–6	
ART 630	Foreign Studies in Studio Art	1–6	

Economics

ECON 505	Introduction to the Civilization of South Asia I	3	
ECON 506	Introduction to the Civilization of South Asia II	3	
ECON 636	Capitalism and Socialism	3	
ECON 681	International Trade	3	I
ECON 682	Economics of Underdeveloped Countries	3	D

Geography

GEOG 200	Human Geography	3	
GEOG 300	Geography of Tourism	3	
GEOG 440	Geography of Natural Resources	3	
GEOG 505	Introduction to the Civilization of South Asia I	3	
GEOG 506	Introduction to the Civilization of South Asia II	3	
GEOG 620	Geography of Latin America	3	
GEOG 640	Geography of Europe	3	
GEOG 650	Geography of Former Soviet Lands	3	
GEOG 715	World Population Patterns	3	
GEOG 730	World Agricultural Systems	3	D
GEOG 740	Geography of Transportation	3	
GEOG 760	Human Impact on the Environment	3	

History

HIST 505	Introduction to the Civilization of South Asia I	3	
HIST 506	Introduction to the Civilization of South Asia II	3	
HIST 508	Introduction to the Modern East Asia	3	
HIST 509	Japan Since 1550	3	
HIST 543	The U.S. and World Affairs, 1776–Present	3	
HIST 544	History of U.S.–Soviet Relations Since 1917	3	I
HIST 560	Latin American Nations	3	
HIST 562	Modern Mexico	3	
HIST 573	Twentieth-Century Europe	3	
HIST 574	Europe Since World War II	3	
HIST 577	European Diplomatic History Since Napoleon	3	I

Mass communications

MC 725	International Communications	3	

Modern languages

FREN 502	French Literature in Translation	3	
GRMN 502	German Literature in Translation	3	
RUSSN 504	Russian Literature in Translation: The 19th Century	3	
SPAN 505	Spanish Literature in Translation	3	
MLANG 507	European Literature in Translation	3	
RUSSN 508	Russian Literature in Translation: The Soviet Period	3	
FREN 514	French Civilization	3	
GRMN 530	German Civilization	3	
SPAN 565	Spanish Civilization	3	
SPAN 566	Hispanic-American Civilization	3	

Political science

POLSC 505	Introduction to the Civilization of South Asia I	3	
POLSC 506	Introduction to the Civilization of South Asia II	3	
POLSC 541	International Relations	3	
POLSC 545	The Politics of Developing Nations	3	D
POLSC 621	West European Politics	3	
POLSC 622	Latin American Politics	3	
POLSC 623	South Asian Politics	3	
POLSC 624	Middle Eastern Politics	3	
POLSC 625	Southeast Asian Politics	3	
POLSC 626	African Politics	3	
POLSC 627	Eastern and Central European Politics	3	
POLSC 628	Comparative Security Establishments	3	
POLSC 629	Administration in Developing Nations	3	D
POLSC 630	Politics of Russia and the Former Soviet Union	3	
POLSC 642	International Conflict	3	I
POLSC 645	International Politics of Europe	3	I
POLSC 647	International Law	3	I
POLSC 649	International Defense Strategies	3	I
POLSC 651	International Organization	3	I
POLSC 652	International Politics of South Asia	3	I
POLSC 653	International Politics of the Middle East	3	I
POLSC 654	International Politics of Africa	3	I
POLSC 754	Professional Diplomat and Foreign Policy I	3	
POLSC 756	International Political Economy	3	I

Sociology

SOCIO 505	Introduction to the Civilization of South Asia I	3	
SOCIO 506	Introduction to the Civilization of South Asia II	3	
SOCIO 507	Political Sociology of Latin America	3	
SOCIO 535	Population Dynamics	3	
SOCIO 633	Gender, Power, and International Development	3	D
SOCIO 738	Inter-American Migration	1	
SOCIO 742	Society and Change in South Asia	3	

College of Business Administration

FINAN 554	International Financial Management	3	
MANGT 690	International Management	3	
MKTG 544	International Marketing	3	I

College of Human Ecology

FN 702	Nutrition in Developing Countries	3	

Latin American Studies

Bradley A. Shaw, Director
215 Eisenhower Hall
785-532-1988
Fax: 785-532-7004
E-mail: ias@ksu.edu
http://www.ksu.edu/ias

The secondary major in Latin American studies provides opportunities for students to examine issues related to Latin America from a variety of perspectives. This interdisciplinary approach is designed to help students understand the systematic nature of political, socioeconomic, technological, and environmental problems in Latin America and the value systems of the people involved.

The program allows students to work with specialists in the humanities and social sciences, and to benefit from the expertise and experience of scientists and engineers who are engaged in research or development projects related to Latin America. Students who complete the secondary major will be qualified to pursue graduate work in Latin American studies. The curriculum will enhance student qualifications for employment in research, economic development, social action, trade, and diplomacy related to Latin America.

A student from any college may choose the secondary major in Latin American studies to complement course work in his or her major. Many courses may simultaneously meet the student's own college or major degree requirements. In this way, electives and required courses within a college curriculum may count toward the secondary major in Latin American studies.

Please note: This list may change as courses are added or revised. Other Latin American studies courses are offered as "special studies," "topics," "problems," or "seminar" categories." Intersession offerings may sometimes be acceptable. Transfer credits from approved study abroad programs, or other institutions, may be accepted as part of a student's program of study.

For the current list of approved courses, and for new program developments, call or write the director, or view the list at the international and area studies website.

Requirements

I. Language requirement: Spanish IV or equivalent, or more advanced competence in Spanish or Portuguese.

II. Area courses: 21 hours, including the Senior Seminar. Courses must be taken in a minimum of four departments, with no more than 9 hours in any one department.

Area courses

Interdisciplinary (required)

DAS 407	Senior Seminar in Latin American Studies

Anthropology

ANTH 634	Indigenous Peoples and Cultures of South America
ANTH 673	Mesoamerican Archaeology

Geography

GEOG 620	Geography of Latin America

History

HIST 560	Latin American Nations
HIST 561	Colonial Hispanic America
HIST 562	Modern Mexico

Modern languages

SPAN 563	Introduction to the Literature of Spanish America
SPAN 566	Hispanic American Civilization
SPAN 750	Spanish American Literature: Origins to Nineteenth Century
SPAN 751	Spanish American Literature: Nineteenth Century
SPAN 752	Contemporary Spanish American Narrative
SPAN 755	Spanish American Drama
SPAN 767	Spanish American Poetry
SPAN 772	Hispanic World Today [when applicable]

Political science

POLSC 622	Latin American Politics

Sociology

SOCIO 507	Political Sociology of Latin America
SOCIO 738	Inter-American Migration

Natural Resources and Environmental Sciences

Steve J. Thien, Director
1022 Throckmorton Hall
785-532-7207

The natural resources and environmental sciences secondary major prepares students to apply broadly-based scientific knowledge to the use, management, sustainability, and quality of soil, air, water, mineral, biological, and energy resources. The NRES program offers a timely and relevant academic emphasis to broaden the environmental perspective students receive in their primary major.

Government, corporate, and public concerns about natural resource and environmental issues abound. These concerns translate into career opportunities for individuals with interdisciplinary training on how humanity affects global functions.

Because natural resource and environmental issues tend to be so extensive and complex, they exceed the scope of any single discipline. Students in the NRES secondary major study environmental issues from a wide base of academic viewpoints. Involvement with students and professors from other disciplines adds skills typically required in environmental careers.

Enroll by appointment with the director or by electronic form at *http://www.ksu.edu/nres/.*

Requirements

I. Entry requirements

Students must successfully complete the following courses to become eligible to pursue the NRES secondary major. One course in the entry or block elective requirements must qualify as a life science course.

a. Four basic science courses (or their more advanced equivalent), and

MATH 100 College Algebra

◆CHM 110 General Chemistry or ◆CHM 210 Chemistry I

PHYS 113 General Physics or PHYS 115 Descriptive Physics, or ◆PHYS 101 and ◆PHYS 103 The Physical World and lab.

◆ECON 110 Principles of Macroeconomics or
◆ECON 120 Principles of Microeconomics

b. Two of the following basic NRES courses. These courses must be from different departments and total a minimum of 6 credits.

AGRON 305 Soils
◆AGRON 335 Environmental Quality
BIOL 198 Principles of Biology
BIOL 210 General Botany
CE/BAE 551 Hydrology
FOR 285 Introduction to Forestry
◆FOR 375 Introduction Natural Resource Management
◆GEOG 220 Environmental Geography I
◆GEOG 440 Geography Natural Resources
◆GEOL 100 Earth in Action
◆GEOL 105 Oceanography
◆GEOL 115 Environmental Geology
◆GEOL 125 Natural Disasters

II. Block elective requirements

From the following lists, students must successfully complete a minimum of 5 courses (15 hours minimum) from at least four departments. One course must be taken from each of the designated areas (natural, applied, and social sciences/humanities), two courses must be numbered 500 or greater, and three courses must have a prerequisite. These lists are continuously being revised, See the director for the most recent version.

Natural science courses
AGRON 305 Soils
AGRON 515 Soil Genesis and Classification
BIOL 433 Wildlife Conservation
BIOL 529 Fundamentals of Ecology
BIOL 612 Introduction to Limnology
BIOL 687 Microbial Ecology
GEOL 305 Earth Resources
GEOL 506 Geology and Environment
GEOL 520 Geomorphology
GEOL 711 Water Resource Geochem.
GEOL 611 Hydrogeology
◆GEOG 221 Environmental Geography II
◆GEOG 535 Fundamentals of Climatology
◆LAR 322 Environmental Issues and Ethics

Applied science courses
AGRON 330 Weed Management
◆AGRON 335 Environmental Quality
AGRON 501 Range Management
AGRON 635 Soil Conservation and Management
AGRON 645 Soil Microbiology
AGRON 746 Physical Properties of Soil
ATM 558 Soil Erosion/Sed. Pollution
ATM 653 Irrigation Practices
ATM 661 Water and Waste in the Environment
BAE 521 Energy in Biological Systems
BAE 530 Natural Resources Engineering
BAE 651 Air Pollution Engineering
BAE 690 Non-Point Pollution Engineering
BAE 705 Irrigation and Drainage
BIOL 303 Ecology of Environmental Problems
BIOL 684 Wildlife Management
BIOL 696 Fisheries Management
CE/BAE 551 Hydrology
CE 552 Hydraulic Engineering
CE 563 Environmental Fundamentals
CE 565 Waste and Wastewater Engineering
CE 766 Wastewater Engineering/Biological Processes
CHE 650 Hazardous Waste Engineering Seminar
CHE 715 Biochemical Engineering
EVET 230 Environmental Chemistry and Toxicology
EVET 270 Hazardous Waste Management
GEOG 705 Remote Sensing of Environment
GEOL 730 Petroleum Geology
GEOL 605 Exploration Geophysics

Social science/humanities courses
AGEC 525 Natural Resources and Environmental Economics
ECON 527 Environmental Economics
ENGL 680 Environment in American Literature
◆GEOG 440 Geography Natural Resources
GEOG 720 Geography of Land Use
GEOG 725 Geography of Water Resources
GEOG 730 World Agricultural Systems
GEOG 760 Human Impact on Environment
GEOG 770 Perception of Environment
HIST 511 Environmental History
LAR 720 Public Lands and Natural Resource Law
LAR 741 Environmental Law
LAR 758 Land Resource Information Systems
LAR 759 Land Resource Evaluation
PHILO 595 Environmental Ethics
PLAN 315 Introduction to Planning
PLAN 590 Problem Planning: Solid Waste Management
SOCIO 536 Environmental Sociology

III. Capstone course requirement

All students must successfully complete the NRES capstone course. This course should be scheduled during the senior year.

◆DAS 582/DEN 582/GENAG 582 Natural Resources/Environmental Sciences Project

◆University general education credit.

Women's Studies

Bonnie Nelson, Interim Director

Professors Gray, Hedrick, McElroy, Oukrop, Richter, Shoop, Takemoto, Thurston, Timberlake, and Walker; Associate Professors Anderson, Benson, Cozzarelli, Culley, De Bres, Dinkel, Dodd, Franko, Kremer, McGrath, Nelson, Spears, Verschelden, and Wood; Assistant Professors Britton, Davis, Dickinson, Hubler, Janette, Scott, Sigler, and Zschoche; Instructors J. Davis, Divine, Earles–Law, and Howell.

The women's studies program focuses on women, whose changing roles and expectations are the most profound and widespread social phenomenon of our time.

Courses in women's studies examine various aspects of women's lives, including not only the barriers and prejudices that still hold women back but also women's achievements. Some courses focus on the nature of sex differences and gender roles. Others focus on the interrelationships among women, gender roles, and the major institutions which shape our society. Humanities courses explore images and achievements of women in a wide range of creative media. History and anthropology discuss interrelationships of women and men in various cultural contexts across time and around the world.

Women's studies is direct preparation for many careers that serve, counsel, or communicate about women. A secondary major in women's studies combines especially well with such majors as journalism, any form of counseling, or pre-law. Women's studies is also an excellent liberal arts concentration, forming a firm basis for graduate work in any liberal professional field.

Course requirements

To complete the secondary major, a student must take two required courses (Introduction to Women's Studies and Senior Seminar in Women's Studies), and 18 semester hours in elective courses from the Colleges of Arts and Sciences, Education, or Human Ecology, for a total of 24 semester hours. Courses in the women's studies program also may serve to meet general education and major requirements, and interdisciplinary courses may be counted as either humanities or social sciences.

Minor

The minor in women's studies consists of 15 credits: WOMST 105 Introduction to Women's Studies; WOMST 405 Senior Seminar (or a WOMST course at or above the 500 level approved by director); and three WOMST approved electives from two different disciplines.

Graduate certificate

Open to students in M.A., M.S., Ph.D., and professional programs at our university, the certificate consists of 12 hours of graduate level courses in women's studies and/or gender. Interested students should contact the director, 3 Leasure Hall, for more information.

Interdisciplinary courses

WOMST 105. Introduction to Women's Studies. (3) I, II. A systematic introduction to women's studies as an academic discipline, drawing research from humanities, social science, education, human ecology, and management to analyze images of women, status of women, sex differences, gender roles and stereotypes, patterns of success, women and relationships, current controversial issues affecting women, and feminism as a social and historical movement. An academic perspective on issues of equality and justice for women, emphasizing scholarship on how women perceive their own lives.

WOMST 395. Studies in Gender and Society. (3) I. Interdisciplinary examination of the way that social institutions and practices construct gender, and the way that gender structures society. Focus might be on girlhood, women and social change, women in revolution, etc. Can be repeated once with change of content. Pr.: ENGL 100 or 110.

WOMST 405. Senior Seminar in Women's Studies. (3) II. An intercollegiate, interdisciplinary course organized topically with students presenting papers which draw upon previous and concurrent academic experience and which approach a given topic with a consistent focus on the role of women. Provides supervised independent study and subsequent discussion, allowing students to integrate and order their perceptions about the unique roles, problems, and contributions of women. Pr.: Introduction to Women's Studies and at least 6 hours of women's studies courses.

WOMST 500. Topics in Women's Studies. (1–3) I, II. A rubric under which a variety of courses are offered, including Women and Science; Women and Religion; Women and Law; Women and Leadership.

WOMST 505. Independent Study in Women's Studies. (1–3) I, II. Independent, interdisciplinary, supervised studies in an area of women's studies which does not fall within the boundaries of a traditional department. May be repeated once for credit with change of topic. Pr.: Junior standing, consent of instructor(s), and approval of women's studies director.

WOMST 506. Approaches to Women's Studies. (3) I. Interdisciplinary examination of the interlocking dynamics of race, class, sexuality, and gender in women's lives. Focus will be on contemporary womanist and feminist theoretical and methodological approaches to addressing how race, class, sexuality, and gender inform women's experiences. Experiential exercises and activism projects will be a key component of the course. For students with a strong interest and/or background in women's studies, especially secondary majors, minors, and graduate students.

WOMST 510. The History and Politics of Family Violence. (3) Intersession. Explores the history of family or domestic violence in America as a social, cultural, legal, and public policy issue from the colonial period to the present. Stress is placed upon the cultural roots and evolution of domestic law. The development of state-controlled social welfare agencies as well as the emergence of the "battered women's movement" is particularly emphasized.

WOMST 605. Gender: An Interdisciplinary Overview. (3) II. Advanced interdisciplinary overview of theory and scholarship on women and gender from disciplines in social sciences, humanities, and professions focusing on human beings. For advanced women's studies students and graduate students.

WOMST 700. Advanced Topics in Women's Studies. (1–3) In-depth theoretical and empirical analysis of the scholarly works relating to an interdisciplinary topic in women's studies. For students who have a basic knowledge of women's studies and/or the topic area.

College of Arts and Sciences

Anthropology

ANTH/SOCIO 508	Male and Female: Cross-Cultural Perspectives
ANTH 633	Gender, Power, and International Development

Art

ART 654	Women in Art

English

ENGL 395	A rubric under which a variety of courses are offered, including American Women Writers
ENGL 525	Women in Literature
ENGL 670	Topic: Women in the 18th Century
ENGL 695	A rubric under which a variety of courses are offered, including Women and Popular Culture
ENGL 720	Shakespeare Comedy and Gender
ENGL 740	Feminist Literary Theory
ENGL 850	Gender and Power in Shakespeare and the Renaissance

History

HIST 512	Women in European History
HIST 540	Women in America, 1600 to the Civil War
HIST 542	Women in America, Civil War to the Present
HIST 551	History and Politics of Family Violence
HIST 980	Topic: Gender in European History
HIST 984	Topic: Gender in American History

Kinesiology

KIN 598	Women and Sports
KIN 796	Gender Issues and Sports and Exercise

Mass communication

MC 612	Women and the Media

Modern languages

FREN 503	French Literature in Translation (when offered as Women in African Literature)

Music

MUSIC 390	Music by Women Composers

Philosophy

PHILO 135	Introduction to Social and Political Philosophy
PHILO 525	Social Political Thought (when offered as Women in Western Thought)
PHILO 560	Philosophy of Feminism

Political science

POLSC 606	Gender and Politics
POLSC 799	Seminar in Political Science (when offered as Women and Law)

Psychology

PSYCH 540	Psychology of Women
PSYCH 543	Women and Mental Health Issues
PSYCH 563	Gender Issues in the Workplace

Social work

SOCWK 543	Women and Mental Health Issues
SOCWK 580	Women's Perspectives on Peace and War
SOCWK 610	Topics in Social Work (when offered as Violence Against Women or Women and Peace)

Sociology

SOCIO 545	The Sociology of Women
SOCIO 633	Gender, Power, and International Development
SOCIO 665	Women and Crime

Speech and theatre

SPCH 505	Rhetoric of Female Slave Narratives
SPCH 630	Topics in Rhetoric and Communication (when offered as Feminism and Rhetoric) or Women and Political Campaign Communication
THTRE 782	Women in Theatre

College of Education

Educational administration

EDADM 786	Topics in Education (when offered as Programming for Women's Concerns)

Foundations and adult education

EDACE 750	Women, Education, and Work

Curriculum, instruction, and policy studies

EDCIP 735	Curriculum Materials for Nonsexist Teaching

College of Human Ecology

Human development and family studies

FSHS 300	Problems in Family Studies and Human Services (when offered as The Mature Woman: Middle Age and Later Years)
FSHS 350	Family Relationships and Gender Roles
FSHS 600	Economic Status of Women
FSHS 708	Topics in Family Studies and Human Services (when offered as The Legal Rights of Women)
FSHS 865	Human Sexuality

Also offered every year are intersession courses and special topics courses in a variety of disciplines such as women and science fiction; gender and ethnicity in Jewish American novels; women in Central America.

Agriculture

Marc. A. Johnson. Dean and Director of the Kansas Agricultural Experiment Station and the Kansas Cooperative Extension Service
114 Waters Hall
785-532-7137

Lawrence H. Erpelding, Associate Dean
Jackie McClaskey, Assistant Dean
117 Waters Hall
785-532-6151

The College of Agriculture offers 15 bachelor of science degree programs, 10 master of science programs, nine programs leading to the Ph.D., and a pre-veterinary medicine program. The programs and options provide flexibility to meet the needs of students who will enter varied careers in the food chain and related agribusinesses.

The profession

Professional agriculture is the application of the physical, biological, and social sciences and the principles of management to food production, preservation and processing, crop and livestock marketing, culture of flowers and ornamentals, life processes of plants and animals, natural resources management, economic development, and related fields.

Faculty

More than 95 percent of the instructional faculty of the College of Agriculture have Ph.D. degrees. All are actively involved in research and publish their findings regularly in scientific journals. They work closely with extension specialists. This integration of teaching, research, and extension helps ensure that courses are current and relevant.

Facilities

Effective instruction in the application of basic sciences to modern agricultural industries requires land, buildings, livestock, and equipment. More than 4,000 acres of land are used for experimental work and for instruction.

A feed mill, flour mill, and bakery include modern equipment from eight countries. Well-equipped drafting rooms are used by milling students. Greenhouses and field plots provide plants for horticulture courses.

Modern animal industry and dairy and poultry buildings contain some of the latest equipment for teaching and research in nutrition, genetics, and food processing (meat, milk, eggs). Livestock of many breeds, plus various soil types, field crops, fruits, vegetables, and ornamentals, are used in teaching and research.

Professional programs

Agribusiness—B.S., M.A.B.
Agricultural economics—B.S., M.S., Ph.D.
Agricultural education—B.S.
Agricultural journalism—B.S.
Agricultural technology management—B.S.
Agronomy (crops and soils)—B.S., M.S., Ph.D.
Animal sciences and industry—B.S., M.S., Ph.D.
Bakery science and management—B.S.
Entomology—M.S., Ph.D.
Feed science and management—B.S.
Food science—M.S., Ph.D.
Food science and industry—B.S.
Genetics—M.S., Ph.D.
Grain science—M.S., Ph.D.
Horticultural therapy—B.S.
Horticulture—B.S., M.S., Ph.D.
Milling science and management—B.S.
Park resource management—B.S.
Plant pathology—M.S., Ph.D.
Pre-veterinary medicine—three years
Recreation and park administration—B.S.

Internships and cooperative education

Internships and co-op programs throughout the state and nation are available with agribusiness firms and agencies and in production agriculture to gain on-the-job experience. Specific internship and co-op requirements vary among departments and interdepartmental programs. Students may earn academic credit and money for approved internships and co-op experiences. The number of internships and co-op programs in the College of Agriculture is growing as companies seek to attract K-State graduates.

Extracurricular activities

Leadership, communication, and interpersonal skills are essential for today's agriculture graduate. K-State offers many opportunities to become involved on campus through departmental clubs, service organizations, student government, agricultural competition teams, and much more. Each contributes to greater personal and professional development.

Scholarships

All students applying for College of Agriculture scholarships must complete the K-State scholarship application. File it electronically at *http://www.ksu.edu/sfa* or obtain an application from your high school counselor, community college financial aid office or the College of Agriculture, Office of Academic Programs, 117 Waters Hall.

By completing the university's scholarship application, you become eligible for all university, college, and departmental scholarships for which you are qualified. Scholarship applications should be submitted by February 1 to receive priority.

General Requirements

Selection of a major

Students usually select a curriculum or major when they enter the college. They are provided academic advisors in their major fields. Students enroll in general agriculture if they want to enter some part of professional agriculture but are not yet ready to identify a particular major. They are assigned an academic advisor in the academic programs office or an advisor in one of the academic departments. These students are urged to choose majors before the end of the freshman year.

The curriculum or major may be changed at almost any time and with relative ease, though a change after the sophomore year may delay graduation.

Electives permit adaptation of the program to the student's goals. The student should work with an advisor to develop the most beneficial and effective academic program.

Many students work part time at K-State laboratories, greenhouses, and farms. This experience adds greatly to students' learning and understanding.

Selection of an option

Most major fields of study in agriculture provide for selection of groups of courses known as options. Some typical options include:

Business and industries

Students who wish to emphasize business, marketing, and management related to agribusiness firms may select an option in business and industries. Course work includes classes in business administration and economics.

Production/technical

Those who plan to enter farming, ranching, horticultural production, or other technical positions in agriculture or agribusiness may select a production/technical option. Study in one of these options allows students to gain more depth in the technical aspects of their majors.

Sciences/professional

A science/professional option prepares students for research and graduate and professional schools. This option allows students to structure programs strong in the basic sciences and/or other areas that will enhance success in graduate and professional schools such as law and veterinary medicine.

Additional options are available in certain curricula or majors to allow students to develop specific strengths or specializations.

Suggested courses

Suggested humanities and social science electives (must be taken from more than one department):

College of Architecture and Design—any course in history or appreciation of architecture
Art—courses in appreciation and theory
Economics—above ECON 110 Principles of Macroeconomics
English—any except courses in composition
Geography—any except GEOG 220 Environmental Geography I and GEOG 221 Environmental Geography II
History—any course
Human development and family studies—any course
Modern languages—any course
Music—any course in theory or appreciation of music
Philosophy—any course
Political science—any course
Psychology—any course
Sociology, anthropology, and social work—any course
Speech—any course in theater and interpretation

Suggested additional communications courses

AGCOM 400	Agricultural Business Communications	3
GENAG 410	Agricultural Student Magazine	2
ENGL 300	Expository Writing III	3
ENGL 516	Written Communications for the Sciences	3
SPCH 311	Business and Professional Speaking	3
SPCH 321	Public Speaking II	2
SPCH 325	Argumentation and Debate	3
SPCH 326	Small Group Discussion Methods	3
SPCH 726	Seminar in Persuasion	3
MC 400	News and Feature Writing	3
MC 470	Audio I	3
MC 480	Video I	3
MKTG 442	Sales Communications	3
EDSEC 706	Teaching Adults in Extension	3

University General Education

The College of Agriculture university general education program assures that all undergraduate programs provide breadth through the completion of at least 18 semester hours of approved courses/experiences, of which one-third of those credits will be at the 300 level or higher.

To ensure breadth, university general education courses are required in at least four of the following areas (a course may be used in only one category):

- Economics
- Social sciences
- Humanities
- Communications (e.g., writing or verbal intensive courses)
- Quantitative sciences (e.g., statistics, mathematics)
- Biological sciences (e.g., biology, botany)
- Physical sciences (e.g., chemistry, geology, physics)
- A course from a professional college: architecture, agriculture (one agriculture course outside one's major can be used only as a free or restricted elective), business, education, human ecology, engineering. Acceptable courses will be determined by each department and approved by the dean's office.

Departments within the college may specify which of the eight areas their students can use to satisfy university general education requirements. The program is designed to take advantage of the strong tradition of excellence in advising to determine the specific university general education courses that the best suited to each individual.

Transfer students will follow the university general education policy in effect for this population. See the Admissions section of this catalog for details.

In course descriptions, university general education courses are marked with a ◆. The Degrees section at the front of this catalog lists other university general education courses. A list of currently offered university general education courses is available on the web at these addresses:

- *http://www.ksu.edu/course/*
- *http://www.ksu.edu/educadv/*

Program Choices

General agriculture

Students who are undecided regarding the selection of a major in agriculture may want to enroll in general agriculture. Courses taken in this area are selected with the help of an advisor to be applicable to any major in agriculture and to most other programs offered at the university. Examples of course selections for first semester follow:

Example I

ENGL 100	Expository Writing I	3
GENAG 101	Ag Orientation	1
ASI 102	Principles of Animal Science	3
ASI	An ASI Lab	1
MATH 100	College Algebra	3
FOR 285	Introduction to Forestry	3
		14

Example II

AGEC 120	Agricultural Economics and Agribusiness	3
GENAG 101	Ag Orientation	1
CHM 110	General Chemistry	3
	and	
CHM 111	General Chemistry Lab	1
	or	
CHM 210	Chemistry I	4
ENGL 100	Expository Writing I	3
GRSC 100	Principles of Milling	3
		14

Example III

GENAG 101	Ag Orientation	1
ECON 110	Principles of Macroeconomics	3
EDSEC 300	Introduction to Agricultural Education	1
AGRON 220	Crop Science	4
PSYCH 110	General Psychology	3
ASI 302	Introduction to Food Science	3
		15

Various foundation and agriculture courses can be substituted in the examples above, depending on the student's interest.

Natural resource management

Students interested in natural resource management can pursue programs in park resource management; range management; recreation and park administration; and soil and water science.

Majors in park resource management and recreation and park administration can be earned in the Department of Horticulture, Forestry, and Recreation Resources.

Range management and soil and water science options are available through the Department of Agronomy.

These programs provide training for individuals interested in interpretation and application of ecological principles to environmental problems involving natural resources. Each program contains courses in the social sciences and humanities to help students become sensitive to the interactions between humans and their environmental surroundings. Courses in the physical and biological sciences help students understand and solve environmental problems, and courses in communications assist them in interpreting, conveying, and employing solutions.

Pre-veterinary medicine program

Students who satisfactorily complete the pre-veterinary medicine program and the first two years of the curriculum in veterinary medicine will be eligible for a bachelor of science degree in the College of Agriculture. Pre-veterinary medicine requirements may also be completed in the College of Arts and Sciences.

GENAG 101	Ag Orientation	1
ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Laboratory	2
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
BIOL 198	Principles of Biology	4
BIOL 455	Microbiology (with lab)	4
BIOL 510	Embryology	3
BIOL 511	Embryology Laboratory	1
ASI 500	Genetics	3
Electives		9
Humanities and/or social science electives		12

Dual degrees/dual majors

The agribusiness complex of industries (processing, preservation, distribution, and retailing of farm-produced food, and manufacture and sale of farm equipment, feeds, and agricultural chemicals) employs a variety of professionally trained personnel. The type of education required varies with the nature of the work performed. A dual degree or a dual major may be appropriate, depending on the student's occupational objectives.

Dual degrees may be earned by a student who desires a B.S. degree in some discipline in agriculture along with a B.S. degree in some other college at K-State. To earn a dual degree, the student must complete the requirements for each degree.

Dual majors are completed by students who wish to complete two different programs of study in agriculture while earning a bachelor of science degree in agriculture. This approach allows the student to select two majors to give greater depth and breadth to the educational program. The student is required to complete the requirements for both majors and earns a bachelor of science degree in agriculture.

Secondary majors

Certain departmental courses have been approved for credit toward secondary majors in gerontology, international studies, and natural resources and environmental sciences. A listing of approved courses may be found in the Secondary Majors section of this catalog.

Natural resources/environmental sciences secondary major

See the Secondary Majors section of this catalog.

Minors

To pursue a minor in the College of Agriculture, students must: (1) file a declaration of intent to pursue a minor with the minor-granting department, and (2) consult with an advisor in the minor-granting department prior to enrolling in the last three courses used to satisfy minor requirements.

Minors may be earned in agribusiness, agricultural economics, agricultural technology management, agronomy, animal sciences and industry, entomology, food science, horticulture, bakery science, feed science, cereal chemistry, and plant pathology. See departmental listings for more information.

Agriculture honors program

Students who have attained a cumulative GPA of 3.5 or higher in 12 or more completed hours at Kansas State University will be invited to participate in the College of Agriculture Honors Program, typically at the end of their sophomore year. Community college transfers will be invited into the program following their first semester if they have met the GPA requirement.

The program provides honors students with greater curriculum flexibility, which encourages breadth and depth of study in one or more specific areas. It also exposes honors students to various areas of interest in agriculture. Each student in the program has a committee of three faculty members who assist the student in developing a program of study and in planning independent research activities.

Students seeking to enroll in the program will meet with the honors committee member from the department involved and, with an advisor, will develop an honors curriculum tailored to the student's particular goals. The student, with advice from the advisor, honors committee member, and other faculty member(s), will prepare a short proposal outlining the honors project. This proposal must be approved by the honors advisory committee of the College of Agriculture.

The honors advisory committee will review the proposals for possible scholarship funding priority. These honors project scholarships will be used exclusively for materials and supplies necessary for the completion of the student's honors project.

Students will enroll in the agriculture honors program (GENAG 000) each semester. Students will also enroll for up to 8 credits in a "special problems" course in the appropriate department to receive credit for the honors project. In the senior year, students will enroll in GENAG 515 Honors Seminar for the presentation of their projects.

Completion of the honors project requires presentation of a summary of the project in an honors seminar and a report written in a style suitable for publication in a referred journal in an appropriate field.

Agricultural Economics

Daniel Bernardo,* Head
Barry L. Flinchbaugh, Extension State Leader
Arlo Biere,* Undergraduate Program Coordinator
Allen Featherstone,* Graduate Program Coordinator

Professors Barnaby, Barton,* Bernardo,* Biere,* Erickson,* Fausett, Featherstone,* Flinchbaugh, Grunewald,* Johnson,* L. Langemeier,* Mintert,* Norman,* Schroeder,* Schurle,* Tierney, and Williams;* Associate Professors Barkley,* Burton,* Darling,* Dhuyvetter, M. Langemeier,* and Warmann; Assistant Professors Boland,* Fox,* Hamilton,* Jones,* Kastens,* Leatherman,* Marsh, McEowen,* O'Brien, and Stiegert;* Senior Agricultural Economists Borsdorf and Kiser; Associate Agricultural Economists Lea;* Administrator Farm Management DeLano; Emeriti: Professors Buller,* Dunbar, Figurski, Hess,* Kelley,* Knight,* Koudele,* Manuel,* Maxon, McCoy,* Orazem,* Parker, Phillips,* Schlender, Schruben,* Sjo,* Sobering, Sorenson,* Thomas, and Walker.

Agribusiness

Bachelor of science in agribusiness
127 semester hours

Agribusiness is the study of the business and economics of agribusiness firms. Aspects unique to agribusiness are the risks and uncertainties of agricultural production, the heavy reliance on natural resources, the uniqueness of the institutions that govern food and agriculture, the competitive structures within the agribusiness sector, the technology of commercial agriculture and food processing, and the global dimensions of food and agriculture.

The agribusiness curriculum emphasizes agribusiness courses in agricultural economics and foundation courses in business administration.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

Suggested schedule for first two years

First semester

ENGL 100	Expository Writing I	3
MATH 100	College Algebra	3
AGEC 105	Agricultural Economics and Agribusiness Orientation	1
Agricultural or food science elective*		3–4
Social science elective***		3
		14

Second semester

AGEC 120	Agricultural Economics and Agribusiness	3
MATH 205	Calculus and Linear Algebra	3
SPCH 105	Public Speaking IA	2
Social science elective***		3
Natural science elective****		4
		15

Third semester

◆ECON 110	Principles of Macroeconomics	3
ENGL200	Expository Writing II	3
Humanities elective**		3
Natural science elective****		4
Social science***		3
		16

Fourth semester

AGEC 318	Agribusiness Management	3
◆ACCTG 231	Accounting for Business Operations	3
Ag or food science elective*		3–4
Humanities electives**		3
Communication Three hours in English (above 200), Speech (above 200) or a modern language.		3
		15–16

*Select from the agricultural and food science electives list.

**Select from history, music, art, English (above 210), philosophy, theatre, dance, or modern language.

***Select from psychology, sociology, political science, anthropology, or history.

****Select from General Chemistry and Lab, Principles of Biology, or General Physics I.

Agricultural and food science electives

AGRON 220	Crop Science	
	or	
HORT 201	Introductory Horticultural Science	4
AGRON 305	Soils	4
AGRON 330	Weed Management	3
ASI 102	Principles of Animal Science	3
ASI 105	Animal Science and Industry	1
ASI 106	Dairy/Poultry Science	1
ASI 300	Principles of Livestock Feeding	3
ATM 160	Agricultural Systems and Technology	3
ENTOM 300	Economic Entomology	3
PLPTH 500	Principles of Plant Pathology	3
FOR 285	Introduction to Forestry	3
HORT 520	Fruit Production	3
HORT 560	Vegetable Crop Production	3
AGRON 340	Grain Grading	2
ASI 350	Meat Science	3
ASI 361	Meat Processing	2
ASI 302	Introduction to Food Science	3
ASI 305	Fundamentals of Food Processing	3
GRSC 100	Principles of Milling	3
FN 132	Basic Nutrition	3
FN 301	Food Trends, Legislation, and Regulation	3

Additional requirements for B.S. in agribusiness

◆ACCTG 241	Accounting for Investing and Financing	3
AGEC 490	Computer Applications	2
AGEC 500	Production Economics	3
AGEC 505	Agricultural Market Structures	3
AGEC 515	Agribusiness Marketing	3
AGEC 599	Agribusiness Management Strategies	3

Agricultural economics electives 15

AGEC 410	Agricultural Policy
AGEC 416	Agricultural Law and Economics
AGEC 417	Rural Banking
AGEC 420	Commodity Futures Marketing
AGEC 421	Livestock and Meat Marketing
AGEC 422	Grain Marketing
AGEC 513	Agricultural Finance
AGEC 525	Natural Resource and Environmental Economics
AGEC 590	Agricultural Economics and Agribusiness Honors Problems (open to honor students only)
AGEC 598	Farm Management Strategies
AGEC 605	Price Analysis and Forecasting
AGEC 610	Current Agricultural and Natural Resource Policy Issues
AGEC 615	International Agricultural Development
AGEC 623	International Agricultural Trade
AGEC 631	Principles of Transportation
AGEC 632	Agribusiness Logistics
AGEC 710	Advanced Agribusiness Management
AGEC 712	Linear Programming Application

Two of the following 6

FINAN 450	Introduction to Finance
MANGT 420	Management Concepts
◆MKTIB 400	Marketing

Business elective 3

ECON 510	Intermediate Macroeconomics	
	or	
ECON 530	Money and Banking	3

Agricultural and food science electives 3–6
Statistics 3–6
Free electives 12–15
Total including first two years 127

Either AGEC 513 or FINAN 450 must be included in the program of study.

◆Denotes university general education courses.

Agricultural economics

Bachelor of science in agriculture
127 semester hours

Agricultural economics is the study of the economic factors affecting agricultural production, food consumption, commodity marketing, farm management, natural resource use and management, agricultural finance and agricultural trade.

Students must complete university general education requirements as specified by the College of Agriculture. See College of Agriculture General Requirements section.

Farm management option

This option includes coursework in livestock and crop production, in agricultural technology and management, and in agricultural economics applied to the management of the farm, ranch, or commercial feedlot.

The suggested schedule for the first two years is the same as that for the agribusiness degree except that ASI 102 and a laboratory and AGRON 220 are the required agricultural science courses, and AGEC 308 Farm and Ranch Management replaces AGEC 318 Agribusiness Management. The additional requirements are below.

AGEC 490	Computer Applications	2
AGEC 500	Production Economics	3
AGEC 505	Agricultural Market Structures	3
AGEC 513	Agricultural Finance	3
AGEC 598	Farm Management Strategies	3

Agricultural economics electives (including at least one numbered 600 or above) 15

AGEC 410	Agricultural Policy
AGEC 416	Agricultural Law and Economics
AGEC 417	Rural Banking
AGEC 420	Commodity Futures Marketing
AGEC 421	Livestock and Meat Marketing
AGEC 422	Grain Marketing
AGEC 515	Agribusiness Marketing
AGEC 525	Natural Resource and Environmental Economics
AGEC 590	Agricultural Economics and Agribusiness Honors Problems (open to honor students only)
AGEC 599	Agribusiness Management Strategies
AGEC 605	Price Analysis and Forecasting
AGEC 610	Current Agricultural and Natural Resource Policy Issues
AGEC 615	International Agricultural Development
AGEC 623	International Agricultural Trade
AGEC 631	Principles of Transportation
AGEC 632	Agribusiness Logistics
AGEC 710	Advanced Agribusiness Management
AGEC 712	Linear Programming Application

◆ACCTG 241	Accounting for Investing and Finance	3
AGRON 305	Soils	4
ECON 510	Intermediate Macroeconomics	
	or	
ECON 530	Money and Banking	3

Statistics 3–6
Advanced agricultural science electives (approved list available from department) 9
Agricultural technology management electives (approved list available from department) 3–4
Electives 6–11
Total including first two years 127

Specialty option

This option allows students to combine agricultural economics with a specialty of 15 hours in another department or field.

Requirements for the first two years are the same as for the agribusiness degree. Additional requirements are below.

AGEC 490	Computer Applications	2
AGEC 500	Production Economics	3
AGEC 505	Agricultural Market Structures	3
◆ACCTG 241	Accounting for Investing and Finance	3
ECON 510	Intermediate Macroeconomics	
	or	
ECON 530	Money and Banking	3

Statistics 3-6

Agricultural economics electives (including at least two numbered 598 or above) 21

AGEC 308	Farm and Ranch Management
AGEC 318	Agribusiness Management
AGEC 410	Agricultural Policy
AGEC 416	Agricultural Law and Economics
AGEC 417	Rural Banking
AGEC 420	Commodity Futures Marketing
AGEC 421	Livestock and Meat Marketing
AGEC 422	Grain Marketing
AGEC 513	Agricultural Finance
AGEC 515	Agribusiness Marketing
AGEC 525	Natural Resource and Environmental Economics
AGEC 590	Agricultural Economics and Agribusiness Honors Problems (open to honor students only)
AGEC 598	Farm Management Strategies
AGEC 599	Agribusiness Management Strategies
AGEC 605	Price Analysis and Forecasting
AGEC 610	Current Agricultural and Natural Resource Policy Issues
AGEC 615	International Agricultural Development
AGEC 623	International Agricultural Trade
AGEC 631	Principles of Transportation
AGEC 632	Agribusiness Logistics
AGEC 710	Advanced Agribusiness Management
AGEC 712	Linear Programming Application

Specialization in a second department or field, at least 6 credit hours at 500 level or higher 15
Electives 13–17
Total including first two years 127

Quantitative option

This option requires additional mathematics, statistics, and computer science to prepare the student for advanced studies in agricultural economics.

Requirements for the first two years are the same as for the agribusiness degree except MATH 220, 221, and 222 are required instead of MATH 205. Additional requirements are below.

AGEC 490	Computer Applications	2
AGEC 500	Production Economics	3
AGEC 505	Agricultural Market Structures	3
◆ACCTG 241	Accounting for Investing and Finance	3
CIS 200	Fundamentals of Computer Programming	3
CIS 203	Fundamentals of Computer Programming Laboratory	1
◆STAT 350	Business and Economic Statistics I	
	or	
STAT 510	Introductory Probability and Statistics I	3
STAT 351	Business and Economic Statistics II	3
	or	
STAT 511	Introductory Probability and Statistics II	3
MATH 551	Applied Matrix Theory	3
ECON 510	Intermediate Macroeconomics	3

Agricultural economics electives (including at least two numbered 598 or above) 15

AGEC 308	Farm and Ranch Management
AGEC 318	Agribusiness Management
AGEC 410	Agricultural Policy
AGEC 416	Agricultural Law and Economics
AGEC 417	Rural Banking
AGEC 420	Commodity Futures Marketing
AGEC 421	Livestock and Meat Marketing
AGEC 422	Grain Marketing
AGEC 513	Agricultural Finance
AGEC 515	Agribusiness Marketing

AGEC 525	Natural Resource and Environmental Economics
AGEC 590	Agricultural Economics and Agribusiness Honors Problems (open to honor students only)
AGEC 598	Farm Management Strategies
AGEC 599	Agribusiness Management Strategies
AGEC 605	Price Analysis and Forecasting
AGEC 610	Current Agricultural and Natural Resource Policy Issues
AGEC 615	International Agricultural Development
AGEC 623	International Agricultural Trade
AGEC 631	Principles of Transportation
AGEC 632	Agribusiness Logistics
AGEC 710	Advanced Agribusiness Management
AGEC 712	Linear Programming Application

Quantitative electives (see department list)	9
Electives	13
Total including first two years	**127**

◆Denotes university general education courses.

Agribusiness minor

Prerequisites (in addition to any prerequisites required for specific AGEC courses taken):

MATH 205	Calculus and Linear Algebra
ECON 110	Principles of Macroeconomics
AGEC 120	Agricultural Economics and Agribusiness
	or
ECON 120	Principles of Microeconomics
ACCTG 231	Accounting for Business Operations

Required:

AGEC 500	Production Economics
AGEC 505	Agricultural Market Structures
AGEC 318	Agribusiness Management
AGEC 513	Agricultural Finance

At least 3 credit hours below:

AGEC 420	Commodity Futures Markets
AGEC 421	Livestock and Meat Marketing
AGEC 422	Grain Marketing
AGEC 515	Agribusiness Marketing

Agricultural economics minor

Prerequisites (in addition to any prerequisites required for specific AGEC courses taken):

MATH 205	Calculus and Linear Algebra
ECON 110	Principles of Macroeconomics
AGEC 120	Agricultural Economics and Agribusiness
	or
ECON 120	Principles of Microeconomics

Required

AGEC 500	Production Economics
AGEC 505	Agricultural Market Structures

And at least 9 credit hours from list below, (including at least three numbered 510 or higher)

AGEC 308	Farm and Ranch Management
	or
AGEC 318	Agribusiness Management
AGEC 410	Agricultural Policy
AGEC 420	Commodity Futures Markets
AGEC 421	Livestock and Meat Marketing
AGEC 422	Grain Marketing
ECON 510	Intermediate Macroeconomics
AGEC 513	Agricultural Finance
AGEC 515	Agribusiness Marketing
AGEC 525	Natural Resource and Environmental Economics
AGEC 598	Farm Management Strategies
AGEC 599	Agribusiness Management Strategies
AGEC 605	Price Analysis and Forecasting
AGEC 610	Current Ag and Natural Resource Policy Issues
AGEC 615	International Ag Development
AGEC 623	International Ag Trade
AGEC 631	Principles of Transportation
AGEC 632	Agribusiness Logistics

Agricultural economics courses

AGEC 105. Agricultural Economics and Agribusiness Orientation. (1) I. Introduction to agricultural economics and agribusiness programs, activities, resources, and careers. Required of all freshmen in agricultural economics or agribusiness at K-State.

◆AGEC 120. Agricultural Economics and Agribusiness. (3) I, II. A course suggested for all students interested in the agricultural economy. A study of economic principles, with emphasis on their application to the solution of farm, agribusiness, and agricultural industry problems in relationship to other sectors of the United States economy and foreign countries. No prerequisite. Three hours lec. a week.

AGEC 202. Small Business Operations. (3) I. Opportunities in business ownership, principles governing the starting of a small enterprise; importance, status, problems, and management of a small business. Pr.: ECON 110.

AGEC 308. Farm and Ranch Management. (3) I. Decision-making process, cost concepts, farm records and financial management, budgeting, time value of money, and introduction to whole farm/ranch planning. Two hours rec. and two hours lab. a week. Pr.: AGEC 120 or ECON 120.

AGEC 318. Agribusiness Management. (3) I, II. A study of marketing, production, risk, and financial management in agribusiness firms. Particular attention is given to the application of economic principles to the management of marketing and farm supply firms. Pr.: AGEC 120 or ECON 120.

AGEC 410. Agricultural Policy. (3). I. Institutional and analytical treatment of historical and current economic problems, public policies and government programs affecting agriculture and rural America. Pr.: AGEC 120 or ECON 120 or ECON 110 and Junior Standing.

AGEC 416. Agricultural Law and Economics. (3) I, II. The legal framework for decision making by farm firms, families, and individuals; liabilities, real and personal property, contracts, uniform commercial code, organization of farm firms, intergeneration property transfers, water law, fence law, federal and state regulatory power, insurance, income tax, and social security. Three hours rec. a week. Pr.: ECON 110 and junior standing.

AGEC 417. Rural Banking. (3) II. Bank management in rural areas, place of rural banks in the banking system, asset appraisal, loan analysis, focused on banks serving the credit needs of farmers, small town businesses and rural consumers. Two hours rec. and two hours lab. a week, including guest speakers. Pr.: ECON 110 and ACCTG 231 or AGEC 308 or AGEC 318.

◆AGEC 420. Commodity Futures Markets. (2) I, II. The evaluation, function, mechanics analysis, and application of the commodity futures markets are discussed. Topics include fundamental commodity price analysis; technical analysis, hedging, and forward pricing applications; options on futures contracts; and sources, uses, and interpretation of commodity market information. Two hours rec. a week. Pr.: AGEC 120 or ECON 120.

AGEC 421. Livestock and Meat Marketing. (2) II. A study of the market structure and organization of the livestock meat economy, with emphasis on factors affecting prices, changing competitive market arrangements, and marketing problems of farmers and ranchers, market agencies, and processing firms. Two hours rec. a week. Pr.: AGEC 120 or ECON 120, and AGEC 420 or conc.

AGEC 422. Grain Marketing. (2) I. Economic study of grain trade organization, farm policy, grain grades, storage, international contracting and financing, farmer contracting, grain merchandising, trade policy and grain marketing of competing exporting countries. Pr: AGEC 120 or ECON 120; and AGEC 420 or concurrent enrollment.

AGEC 441. Agricultural Economics and Agribusiness Seminar. (Var.) Seminars of special interest will be offered upon sufficient demand in selected areas relating to agricultural economics and agribusiness or competitive teams qualifying for academic credit.

AGEC 445. Agribusiness Internship. (1–3) I, II, S. Approved and supervised work-study programs in various areas of agribusiness. Project reports required. Pr.: Junior standing and prior departmental approval.

AGEC 450. Agricultural Economics and Agribusiness Problems. (Var) I, II, S. Pr.: Consent of the instructor.

AGEC 490. Computer Applications in Agricultural Economics and Agribusiness. (2) I, II. Applications of microcomputers to problems in agricultural economics and agribusiness. Emphasis on budgeting, cash flow, record keeping, financial analysis, statistical analysis, linear programming, and data analysis. Two hours rec. a week. Pr.: AGEC 105, AGEC 120 or ECON 120, and MATH 100.

AGEC 500. Production Economics. (3) I, II. Application of economic principles to problems of agricultural production. Analysis of consumer demand for agricultural products, and input and output decisions of the agricultural firm. AGEC 505 is a continuation of this course and they are intended to be taken in consecutive semesters. Pr.: AGEC 120 or ECON 120; and MATH 205.

AGEC 505. Agricultural Market Structures. (3) I, II. Theory and application of economic principles to marketing problems in agriculture. Pricing of agricultural output and productive services under various forms of economic organization and competition; regional specialization, location, and trade; determinants of economic change; evaluation of economic and consumer welfare. Three hours rec. a week. Pr.: ECON 110 and AGEC 500.

AGEC 513. Agricultural Finance. (3) I, II. Analysis of capital investments, interpretation of financial statements, capital structure considerations for agricultural firms, and farm real estate pricing. Three hours rec. a week. Pr.: AGEC 308 or AGEC 318 and ACCTG 231.

AGEC 515. Agribusiness Marketing. (3) I, II. A broad view of marketing; food markets and consumption; marketing functions and institutions; prices, competition, and marketing costs; functional and organizational issues; food marketing regulations; commodity marketing. Three hours rec. a week. Pr.: AGEC 120 or ECON 120.

◆AGEC 525. Natural Resource and Environmental Economics. (3) I. Emphasis on the application of demand, supply, and price concepts in the study of natural resource use, policies, and management. Interdependence between environmental quality and economic actions are examined through discussion of property rights, economic incentives, externalities and economic components of environmental policies. Pr.: ECON 120 or AGEC 120 and junior standing.

AGEC 541. Agricultural Economics and Agribusiness Seminar. (Var). Seminars of special interest will be offered upon sufficient demand in selected areas relating to agricultural economics and agribusiness.

AGEC 590. Agricultural Economics and Agribusiness Honors Problems. (2) I, II, S. Problems course for College of Agriculture honors projects. Pr.: College of Agriculture honors program participant and consent of honors project advisor.

AGEC 598. Farm Management Strategies. (3) I. A study of management concepts, tools, and decision strategies applied to farm firms. Alternative measures of farm business performance, as well as planning and evaluation techniques for an uncertain environment, are examined. Pr.: AGEC 120, AGEC 308, AGEC 500 and AGEC 513.

AGEC 599. Agribusiness Management Strategy. (3) II. This course integrates the risk, production, marketing, and financial management strategies of agribusiness firms. Special attention is given to the application of economic theory and quantitative analysis to business decision-making processes. In addition to case studies, a variety of analytical techniques will focus on both markets and firms involved in the production and marketing of food commodities. Three hours lec. a week. Pr.: AGEC 318, AGEC 500, AGEC 513 or FINAN 450, AGEC 515.

AGEC 605. Price Analysis and Forecasting. (3) II. The analysis of selected agricultural prices; application of regression analysis to price analysis, the role of futures markets and market efficiency, optimal hedging strategies, commodity option pricing, and price forecasting. Three hours rec. a week. Pr.: STAT 330 or 351; AGEC 490, AGEC 505 or ECON 520.

◆AGEC 610. Current Agricultural and Natural Resource Policy Issues. (3) II. Current issues in agricultural and natural resource policy from divergent perspectives. Classroom discussion, debate, writing assignments, and student presentations. Current events are analyzed and synthesized from both economic and noneconomic perspectives. Topics may include environmental issues, international agricultural development, the politics of farm programs, and the relationship between technology, agriculture, and society. Pr.: AGEC 505 and either AGEC 525 or AGEC 410.

AGEC 615. International Agricultural Development. (3) II. A study of principles of economic development and national and international policies that will stimulate development. Individual study is encouraged to meet student interests for understanding the problems and policies for agricultural development and the influence of such development on international policies of the United States. Three hours rec. a week. Pr.: ECON 110.

AGEC 620. Futures/Options Trading Seminar. (2) I. Students invest their own money each in a commodity educational trading fund. Groups of students present written and oral trade recommendations including fundamental and technical analysis. Trades are peer reviewed and voted upon. Approved trade orders are placed with a broker, and active trades are monitored by students. Remaining balance of fund after deductions for commissions and other trading fees are redistributed to students at semester end. Two hours rec. a week. Pr.: AGEC 420.

AGEC 623. International Agricultural Trade. (3) II. Applied economics of agricultural trade. Emphasis on why trade occurs, current agricultural trade patterns, the effects of agricultural policy on trade and the institutions of trade. Pr.: AGEC 505.

AGEC 631. Principles of Transportation. (3) II. Examines the transportation market from the shippers' point of view by examining the impact of transportation on business firm decisions such as location, markets, and prices. Also covers the costs, prices, and service characteristics of railroads, motor carriers, water carriers, oil pipelines, and airlines. The role and impact of government in the transport market is examined from both a promotion and regulation perspective. Pr.: ECON 120 or AGEC 120.

AGEC 632. Agribusiness Logistics. (3) I. Planning for efficient use of transportation, storage and processing facilities in the handling of raw materials and products for agribusiness firms, controlling shipments and inventory in coordination with warehouse and handling operations, and scientific selection of routes, schedules, and equipment. Pr.: ECON 110 and junior standing.

AGEC 641. Agricultural Economics and Agribusiness Seminar. (Var.) Seminars of special interest will be offered upon sufficient demand in selected areas relating to agricultural economics and agribusiness. Pr.: Junior standing and consent of the instructor.

AGEC 710. Advanced Agribusiness Management. (3) I. Application of quantitative long-range planning tools for agribusiness. Two hours rec. and two hours lab a week. Pr.: AGEC 318 or graduate standing.

AGEC 712. Linear Programming Applications in Agricultural Economics. (3) II. Application of linear programming and related topics for decision analysis in agricultural firms. Pr.: AGEC 500.

AGEC 740. Seminar in Agricultural Economics Analysis. (Var.) Seminar on methods of economic analysis will be offered upon sufficient demand. Pr.: Consent of instructor.

AGEC 750. Agricultural Economics and Agribusiness Problems. (Var.) I, II, S. Pr.: Junior standing and consent of the instructor.

Agricultural Education

Advisor—Harbstreit

Agricultural education

Bachelor of science in agriculture
134 semester hours

Agricultural education involves the broad study of agriculture including a core of course work in agricultural economics, agronomy, animal science, agricultural technology management, and horticulture.

Agricultural education is designed for students who wish to meet requirements to teach agriculture in a public school setting. Graduates in this option meet Kansas State Board of Education certification requirements. An area of occupational emphasis in agribusiness, agricultural production, agricultural technology management, horticulture, or natural resources is available.

Twelve weeks during the second semester of the senior year are devoted to full-time student teaching. On-campus courses meet during the first four weeks of the semester.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

Freshman

First semester

SPCH 105	Public Speaking IA	2
ATM 160	Introduction to Agricultural Systems and Technology	3
EDSEC 300	Introduction to Agricultural Education	1
ENGL 100	Expository Writing I	3
MATH 100	College Algebra	3
	or	
Any math course with College Algebra as a prerequisite		3
Agricultural science/agricultural technology management electives		4
		16

Second semester

◆CHM 110/111	General Chemistry and Lab	4
ASI 102	Principles of Animal Science	3
AGEC 120	Agricultural Economics and Agribusiness	3
HORT 201	Introductory Horticultural Science	4
	or	
AGRON 220	Crop Science	4
Humanities elective		3
		17

Sophomore

First semester

◆BIOL 198	Principles of Biology	4
ENGL 200	Expository Writing II	3
◆ACCTG 231	Accounting for Business Operations	3
◆STAT 320	Elements of Statistics	3
Agricultural science/agricultural technology management electives		4
		17

Second semester

AGRON 305	Soils	4
ASI 300	Principles of Livestock Feeding	3
	or	
ASI 500	Genetics	3
IMSE 241	Production Processes	3
Humanities electives		3
Social science electives		3
		16

Junior

First semester

EDSEC 620	Principles and Philosophy of Vocational Education	3
◆FSHS 110	Introduction to Human Development	3
AGEC 308	Farm and Ranch Management	3
Social science electives		3
Humanities electives		3
Agricultural technology management electives		2
		17

Second semester

Block I classes

EDCEP 315	Educational Psychology	3
EDSP 323	Exceptional Students in Secondary Schools	2
EDSEC 376	Core Teaching Skills and Lab	3
EDETC 318	Instructional Media and Technology	2
Social science electives		3
Agricultural science/agricultural technology management elective		4
		17

Senior

First semester

Block II classes

EDSEC 477	Middle Level/Secondary Reading	2
EDSEC 420	Content and Reading Methods Lab	1
EDSEC 621	Program Planning in Vocational Education	3
EDSEC 500	Methods of Teaching Agriculture	2
EDSEC 503	Teaching Adults Agriculture	1
EDSEC 400	Leadership and Professional Development for Agricultureal Education	1
EDSEC 505	Field Experience in Agricultural Education	1
AGEC 318	Agribusiness Management	3
Agronomy/horticulture elective		3
		17

Second semester

Block III classes

EDCIP 455	Teaching in a Multicultural Society	1
EDCEP 525	Interpersonal Relations in the Schools	1
EDSEC 586	Teaching Participation in the Secondary School and Professional Development Seminar	12
EDSEC 615	Laboratory and Safety Techniques in Teaching Agriculture	3
		17

◆Denotes university general education courses.

Agricultural Technology Management

Faculty—Chung,* Clark,* Kalita,* Koelliker,* Maghirang,* Mankin,* Schrock,* Slocombe,* Spillman,* Steichen,* and Zhang.*

Agricultural technology management

Bachelor of science in agriculture
127 semester hours

Agricultural technology management emphasizes the application and integration of agricultural/biological sciences, agricultural engineered systems, and business to manage human and natural resources in the production and processing of food and agricultural products. It prepares men and women for technical management positions in food and agricultural industries that require an understanding of both technology and management. Agricultural technology management graduates are typically employed in technical sales, service, and management in agribusiness and food and feed processing industries, government agencies, and companies.

Courses are designed to apply physical science concepts and problem solving to food and agricultural systems. Supporting courses provide a foundation of mathematics, chemistry, business, and computer and communication skills. Technical electives are available to develop a degree program that meets personal career objectives.

The curriculum is administered by the Department of Biological and Agricultural Engineering and leads to the bachelor of science degree in agriculture with a major in agricultural technology management.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

John Deere Mentor Program

John Deere and the Department of Biological and Agricultural Engineering have teamed to develop and offer a program that results in a degree in agricultural technology management with a business management emphasis. In addition to a formal education at K-State, students in this program receive mentoring from a John Deere professional and hands-on experiences in approved John Deere dealerships.

Agricultural technology management curriculum

General requirements ... 61

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking 1A	2
GENAG 101	Ag. Orientation	1
◆ECON 110	Principles of Macroeconomics	3
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
MATH 205	General Calculus and Linear Algebra	3
◆CHM 110	General Chemistry	3
	and	
CHM 111	General Chemistry Lab	1
	or	
◆CHM 210	Chemistry I	4
◆ACCTG 231	Accounting for Business Operations	3
◆BIOL 198	Principles of Biology	4
	or	
BIOL 210	General Botany	4
PHYS 113	General Physics I	4
	or	
PHYS 115	Descriptive Physics	4
ATM 160	Introduction to Agricultural Systems and Technology	3
AGRON 305	Soils	4

Computing and information sciences elective	3
Biology elective*	3
Communication elective**	6
Humanities and/or social sciences electives**	9

*Select one:

BIOL 303	Ecology of Environmental Problems	3
BIOL 455	General Microbiology	4
BIOL 500	Plant Physiology	4
BIOL 529	Fundamentals of Ecology	3
BIOL 612	Limnology	4
ASI 500	Genetics	3

**Select from the approved list under general requirements for the College of Agriculture in the *K-State Undergraduate Catalog.*

Agricultural technology management required courses ... 12

ATM 020	Assembly	0
ATM 360	Energy and Power in Biological Systems	3
ATM 511	Agricultural Building Systems	3
ATM 571	Functional Components of Machines	3
ATM 558	Soil Erosion and Sediment Pollution Control	3

Agricultural technology management electives ... 15

ATM 330	Production Machinery Systems	3
ATM 335	Production Machinery Systems Laboratory	1
ATM 450	Sensors and Controls for Agricultural and Biological Systems	3
ATM 460	Internship in Agricultural Technology Management	1–3
ATM 520	Food Manufacturing Laboratory	2
ATM 540	Introduction to Food Engineering	3
ATM 541	Introduction to Food Engineering Laboratory	1
ATM 651	Grain and Forage Handling Systems	3
ATM 653	Water Management and Irrigation Systems	3
ATM 661	Water and Waste in the Environment	3
GRSC 610	Electricity and Control for Milling Processes	3
BAE 551	Hydrology	2

Free electives ... 15

Agricultural and food science electives ... 24

(Twelve hours, including two courses 400 and above, must be concentrated in one of the following four subject matter areas. At least 6 hours must be from the agribusiness and management elective area. At least 6 hours must be in either the plant, natural resource, and enviromental sciences; animal science; or food and feed processing areas. Other courses may be selected with advisor's consent.)

Agribusiness and management electives

◆ACCTG 241	Accounting for Investing and Financing	3
AGEC 120	Agricultural Economics and Agribusiness	3
AGEC 525	Natural Resource and Enviromental Economics	3
Any other agricultural economics course(s) 300 or above		
ECON 510	Intermediate Macroeconomics	3
ECON 530	Money and Banking	3
ECON 681	International Trade	3
FINAN 450	Introduction to Finance	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
◆MKTG 400	Marketing	3
MKTG 450	Consumer Behavior	3
◆STAT 340	Biometrics I	3
	or	
◆STAT 350	Business and Economic Statistics I	3
GRSC 630	Management Applications in the Grain Processing Industries	3

Plant, natural resource, and environmental sciences

AGRON 220	Crop Science	4
AGRON 330	Weed Management	3
AGRON 335	Environmental Quality	3
AGRON 375	Soil Fertility	3
AGRON 385	Soil Fertility Lab	2
AGRON 501	Range Management	3
AGRON 520	Grain Production	3
AGRON 550	Forage Management and Utilization	3
AGRON 551	Forage Management and Utilization Lab	1
AGRON 630	Principles of Crop Improvement	3
AGRON 635	Soil Conservation and Management	3
PLPTH 500	Principles of Plant Pathology	3
◆GEOG 220	Environmental Geography I	4
GEOL 305	Earth Resources	3
GEOL 506	Geology and Environment	3
GEOL 520	Geomorphology	2
ENTOM 300	Economic Entomology	3

Animal science

ASI 102	Principles of Animal Science	3
ASI 300	Principles of Livestock Feeding	3
ASI 315	Livestock and Meat Evaluation	3
ASI 320	Principles of Feeding (cannot take 300 and 320)	3
ASI 400	Farm Animal Reproduction	4
ASI 422	Livestock Sales Management	1
ASI 450	Principles of Livestock Selection	2
ASI 470	Form and Function in Livestock	2
ASI 510	Animal Breeding Principles	3
ASI 512	Gestation of Farm Animals	2
ASI 515	Beef Science	3
ASI 521	Horse Science	3
ASI 524	Sheep Science	3
ASI 533	Anatomy and Physiology	4
ASI 534	Introduction to Pharmacology of Farm Animals	2
ASI 535	Swine Science	3
ASI 615	Range Livestock Nutrition and Management	2
ASI 620	Livestock Production and Management	2
ASI 655	Behavior of Domestic Animals	3
AGRON 501	Range Management	3
AGRON 550	Forage Management and Utilization	3
AGRON 551	Forage Management and Utilization Lab	1
◆BIOCH 265	Introduction to Organic and Biochemistry	5
ENTOM 305	Livestock Entomology	2
ENTOM 306	Livestock Entomology Lab	1

Food and feed processing

ASI 302	Introduction to Food Science	3
ASI 350	Meat Science	3
ASI 361	Meat Processing	2
ASI 370	Principles of Meat Evaluation	2
ASI 395	Classification, Grading, and Selection of Meats	2
ASI 405	Fundamentals of Milk Processing	3
ASI 501	Food Chemistry	3
	or	
FN 501	Food Science: Chemistry and Applications	3
ASI 430	Food Products Evaluation	3
ASI 502	Principles of Dairy Food Processing	4
ASI 550	Dairy Bacteriology	4
ASI 605	Fresh Meat Operations	3
ASI 606	Instrumental Analysis of Food and Agricultural Products	2
ASI 607	Food Microbiology	4
ASI 610	Processed Meat Operations	2
ASI 694	Food Plant Management	3
ASI 695	Quality Assurance of Food Products	3
GRSC 100	Principles of Milling	3
GRSC 110	Flow Sheets	2
GRSC 305	Fundamentals of Food Processing	3
GRSC 500	Milling Science I	4
GRSC 510	Feed Technology I	4
GRSC 520	Extrusion Processing in the Food and Feed Industries	4
GRSC 602	Cereal Science	3
GRSC 651	Food and Feed Production Protection	4
GRSC 655	Cereal Food Plant Design and Construction	3

◆Denotes university general education courses.

Agricultural technology management minor

To earn an undergraduate minor in ATM, students are required to complete a minimum of 15 credit hours consisting of the following courses:

ATM 160	Introduction to Agricultural Systems and Technology	3
ATM 360	Energy and Power in Biological Systems	3

An additional 9 hours of ATM courses with at least 6 hours numbered 500 or greater selected by the student in consultation with an ATM advisor.

Agricultural technology management courses

ATM 020. Assembly. (0) I, II. Presentation of professional problems and practices by students, faculty, and professionals associated with agricultural systems and technology. One hour LEC. a month.

ATM 160. Introduction to Agricultural Systems and Technology. (3) I, II. Introduction to engineering principles associated with natural resource management, environmental quality, machinery systems management, and food and fiber processing and storage. Three hours rec. a week. Not open to seniors. Pr.: One and one-half units of high school algebra and one unit of geometry.

ATM 330. Production Machinery Systems. (3) I. Machinery systems for tillage, planting, and harvesting crops; animal production; and food processing. Impact of these systems on the environment and natural resources. Three hours rec. a week. Pr.: ATM 160 or PHYS 113 or PHYS 115.

ATM 335. Production Machinery Systems Lab. (1). I. Laboratory exercises supplementing ATM 330. Two hours lab a week. Pr. or conc.: ATM 330.

ATM 360. Energy and Power in Biological Systems. (3). I. Energy sources, uses, and supplies; comparison of energy values of different fuel sources; uses of energy in biological systems; power source types (IC engines, turbines, electrical); alternatives to fossil fuels. Three hours rec. a week. Not open to ATM seniors. Pr.: ATM 160 or PHYS 113 or PHYS 115.

ATM 450. Sensors and Controls for Agricultural and Biological Systems. (3). II. Applications of instrumentation. Senors used in agricultural machines and processes for measurement of voltage, force, torque, pressure, displacement, velocity, acceleration, flow, temperature, humidity, etc. Analog and digital signal conditioning and processing. Feedback controls concept. Computer interface. Two hours lecture and three hours lab per week. Pr.: PHYS 113 or PHYS 115, ATM 160 or MATH 100.

ATM 460. Internship in Agricultural Technology Management. (1–3) I. Intern programs in various areas of agricultural technology management. One hour of credit for each four weeks of supervised and evaluated off-campus work experience with cooperating employers. Written report required. A maximum of 3 hours may be applied to a B.S. in agricultural technology management. Pr.: Junior standing.

ATM 511. Agricultural Building Systems. (3) II. Concepts and fundamentals related to agricultural building systems including structural materials, beam and column strength, environmental control for plants and animals, farmstead layouts, crop storage, and livestock and plant production facilities. Three hours rec. a week. Pr.: ATM 160 or PHYS 113 or 115.

ATM 515. Problems in Agricultural Technology Management. (Var.) I, II, S. Problems in the application of technical principles to agricultural technology management. Pr.: Approval of instructor.

ATM 520. Food Manufacturing Laboratory. (2) I. Food manufacturing processes, quality and safety from raw materials to final packaged product. Three hours lab a week. Pr.: MATH 100 and ASI 305.

ATM 540. Introduction to Food Engineering. (3) I. Material and energy balances with application to food processing. Fluid flow and heat transfer in food processing. Thermodynamic properties and laws. Conc. enrollment in ATM 541 is urged. Three hours rec. a week. Pr.: PHYS 113 or 115, BIOCH 120 or CHM 190, MATH 210 or 205.

ATM 541. Introduction to Food Engineering Laboratory Exercises. (1) I. Laboratory experiments supplementing ATM 540. Three hours lab a week. Pr. or conc.: ATM 540.

ATM 571. Functional Components of Machines. (3) II. Machine components used to transmit power and perform functional operations in biological systems. Emphasis on fluid and mechanical drive systems. Three hours rec. a week. Pr.: ATM 360.

ATM 558. Soil Erosion and Sediment Pollution Control. (3) II. Planning and analysis of production systems with respect to regulatory, environmental, and resource management. Water and wind erosion; estimating soil loss; estimating runoff rate and volume; laying out and checking terraces, waterways and farm ponds; agricultural surveying; and conservation planning. Two hours rec. and three hours lab a week. Pr.: AGRON 305.

ATM 651. Grain and Forage Handling Systems. (3) I. Principles of grain and forage conditioning and storage. Structures and equipment for quality preservation. Two hours rec. and three hours lab a week. Pr.: ATM 160 or PHYS 113 or 115 and senior standing.

ATM 653. Water Management and Irrigation Systems. (3) I. Management of water in crop production systems, crop water use, and irrigation scheduling. Fundamentals of water flow in pipe networks, pumping plants, and irrigation sysems. Two hours rec. and three hours lab a week. Pr.: AGRON 305.

ATM 661. Water and Waste in the Environment. (3). II. Principles and practices surrounding: water sources and quality; wastewater microbiology; animal, food processing plant, and domestic waste handling, treatment, and utilization; surface and groundwater contamination, protection, and treatment. Three hours rec. a week. Pr.: CHM 110 or 210 and BIOL 198.

ATM 703. Topics in Agricultural Technology Management. (Var.). On sufficient demand. A course reserved for the study of current topics in agricultural systems and technology. Topics announced when offered. May be repeated to a maximum of nine credit hours. Pr.: Six credit hours of ATM courses.

Agronomy

(Crops, soils, range, weed, water, and environmental sciences)

D. B. Mengel, Head
S. J. Thien,* Assistant Head—Teaching
D. A. Whitney,* Extension State Leader

Professors Fjell,* Hargrove, Kilgore,* Kirkham,* Lamond,* Liang,* Maddux,* Mengel, Ohlenbusch, Owensby,* Paulsen,* Posler,* Ransom,* Regehr,* Schapaugh,* Sears,* Shroyer,* Skidmore,* Stone,* Thien,* Vanderlip,* Welch,* and Whitney;* Associate Professors Armbrust,* Claassen,* Devlin,* Duncan, Eberle, Ehler, Fick,* Fritz,* Gordon,* Hagen,* Ham,* Heer, Janke,* Janssen, Kluitenberg,* Kok,* Martin, Pierzynski,* Peterson, Rice,* and Skinner;* Assistant Professors Al-Khatib,* Brown–Guedira, Burchett, Marsh,* Olson,* St. Amand.* Schmidt,* Staggenborg, Thompson, Tuinstra,* and Wagner;* Associate Agronomist Mannschreck, Roozeboom, and Schaffer; Emeriti: Professors Barnett, Bidwell,* Bieberly,* Bohannon, Casady,* Edelblute, Hobbs,* Jacobs,* Lyles,* Mader,* Russ, Swallow,* Sorenson,* Wassom,* Withee,* and Woodruff;* Associate Professors Atkinson, Overley, and Walter; Assistant Professors Lundquist and Moore; Instructor Dickerson.

Agronomy

Bachelor of science in agriculture
127 semester hours

Agronomy includes crop, soil, weed, range, and environmental sciences. Students in agronomy have diverse interests, including crop production and physiology; crop breeding; soil management, fertility, and conservation; soil and water quality; physical and chemical properties of soils; forages; and range management.

Requirements*

Students majoring in agronomy are required to complete the following courses, plus those in the option that the student selects.

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
MATH 100	College Algebra	3
AGRON 220	Crop Science	4
AGRON 305	Soils	4
AGRON 455	Computer Applications in Agronomy	3
◆CHM 210	Chemistry I	4
◆CHM 230	Chemistry II	4
Organic/biochemistry		3–5
◆BIOL 198	Principles of Biology	4
	or	
BIOL 210	General Botany	4
Physics		4
Social sciences/humanities electives		3–9
Communications elective		3

All options **except** soil and water science require

GENAG 101	Ag Orientation	1
◆ECON 110	Principles of Macroeconomics	3

*Agronomy majors must include 18 credit hours of university general education courses, with at least 6 credit hours numbered ≥ 300. At least one university general education course must be taken in each of the following categories: (a) biological and physical sciences, (b) communications, social sciences, and humanities, (c) agriculture, and (d) free electives.

Options

Additional courses required for specific option:

Business and industry option

AGEC 120	Agricultural Econ/Agribusiness	3
	or	
ECON 120	Principles of Microeconomics	3
AGRON 330	Weed Management	3
AGRON 360	Crop Growth and Development	3
AGRON 375	Soil Fertility	3
AGRON 385	Soil Fertility Lab	2
AGRON 405	Intermship in Agronomy	3
Agronomy electives		9
ASI 102	Principles of Animal Science	3
	or	
ASI 318	Fundamentals of Nutrition	3
◆STAT 350	Business and Economics Statistics I	3
Agricultural economics or business		12
◆ACCTG 231	Accounting for Business Operations	3
PLPTH 500	Plant Pathology	3
ENTOM 300	Economic Entomology	3

One of the following:

BIOL 529	Fundamentals of Ecology	3
ASI 500	Genetics	3
AGRON 645	Soil Microbiology	4
BIOL 455	General Microbiology	4
BIOL 500	Plant Physiology	4
Electives		10–11

Crop consulting option

AGRON 330	Weed Management	3
AGRON 360	Crop Growth and Development	3
AGRON 375	Soil Fertility	3
AGRON 385	Soil Fertility Lab	2
AGRON 405	Internship in Agronomy	3
AGRON 716	Herbicide Interactions	3
	or	
AGRON 720	Weed Ecology	3
◆AGEC 120	Agricultural Econ/Agribusiness	3
	or	
◆ECON 120	Principles of Microeconomics	3

ENTOM 300	Economic Entomology	3
	or	
ENTOM 312	General Entomology	2
	and	
ENTOM 313	General Entomology Lab	1
ENTOM 612	Insect Pest Diagnosis	2
	or	
ENTOM 767	Insect Pest Management	3
PLPTH 500	Plant Pathology	3
PLPTH 607	Plant Disease Diagnosis	2
	or	
PLPTH 613	Plant Disease Control	2
ATM 653	Water Management and Irrigation Systems	3
Agricultural electives		14–16
Business or economics electives		2–3

One of the following:

AGRON 645	Soil Microbiology	4
BIOL 455	General Microbiology	4
BIOL 529	Fundamentals of Ecology	3
Electives		11–14

Production option

AGRON 330	Weed Management	3
AGRON 335	Environmental Quality	3
AGRON 360	Crop Growth and Development	3
AGRON 375	Soil Fertility	3
AGRON 385	Soil Fertility Lab	2
Agronomy electives		9
BIOL 500	Plant Physiology	4
◆STAT 340	Biometrics I	3
◆AGEC 120	Agricultural Econ/Agribusiness	3
	or	
◆ECON 120	Principles of Microeconomics	3
PLPTH 500	Plant Pathology	3
◆ACCTG 231	Accounting for Business Operations	3
	or	
AGEC 308	Farm and Ranch Management	3
ASI 102	Principles of Animal Science	3
	or	
ASI 318	Fundamentals of Nutrition	3
ATM	Elective	3
	or	
ATM 330	Production Machine Systems	3
	and	
ATM 335	Production Machine Systems Lab	1
ENTOM 300	Economic Entomology	3

Two of the following:

AGRON 645	Soil Microbiology	4
ASI 500	Genetics	3
BIOL 529	Fundamentals of Ecology	3
◆GEOL 100	Earth in Action	3
◆GEOG 350	Introduction to Climatology	3
Electives		13–15

Range management option

MATH 150	Plane Trigonometry	3
BIOL 500	Plant Physiology	4
BIOL 529	Fundamentals of Ecology	3
BIOL 551	Taxonomy of Flowering Plants	4
ENTOM 300	Economic Entomology	3
◆GEOL 100	Earth in Action	3
AGRON 501	Range Management	3
AGRON 515	Soil Genesis and Classification	3
AGRON 560	Field Identification of Range and Pasture Plants	1
AGRON 660	Range Research Techniques	3
AGRON 670	Range Management Problems	3
AGRON 681	Range Ecology	3
AGRON 762	Range Grasses	2
	or	
ASI 615	Range Livestock Management	2
AGRON 790	Range Management Planning	3
ASI 102	Principles of Animal Science	3
ASI 515	Beef Science	3
◆AGEC 120	Agricultural Econ/Agribusiness	3
	or	
◆ECON 120	Principles of Microeconomics	3
Math or statistics elective		3
Electives		14–16

Science option

◆AGEC 120	Agricultural Econ/Agribusiness	3
	or	
◆ECON 120	Principles of Microeconomics	3
AGRON 330	Weed Management	3
AGRON 360	Crop Growth and Development	3
AGRON 375	Soil Fertility	3
AGRON 385	Soil Fertility Lab	2
Agronomy electives		9
PLPTH 500	Plant Pathology	3
ASI 500	Genetics	3
	or	
◆GEOL 100	Earth in Action	3
BIOL 500	Plant Physiology	4
CHM 350	General Organic Chemistry	3
CHM 371	Chemical Analysis	4
◆STAT 340	Biometrics	3
MATH 150	Plane Trigonometry	3
MATH 220	Analytic Geometry and Calculus I	4
PHYS 114	General Physics II	4
ENTOM 300	Economic Entomology	3
Electives		15

Soil and water science option

MATH 150	Plane Trigonometry	3
MATH 220	Analytic Geometry/Calculus	4
	or	
◆STAT 340	Biometrics I	3
BIOL 303	Ecology/Environmental Problems	3
	or	
BIOL 500	Plant Physiology	4
BIOL 529	Fundamentals of Ecology	3
◆GEOL 100	Earth in Action	3
GEOL 103	Geology Laboratory	1
◆AGEC 525	Natural Resources Environmental Economics	3
◆LAR 322	Environmental Issues and Ethics	3
◆AGEC 120	Agricultural Econ/Agribusiness	3
	or	
◆ECON 120	Principles of Microeconomics	3
AGRON 335	Environmental Quality	3
AGRON 360	Crop Growth and Development	3
AGRON 375	Soil Fertility	3
AGRON 385	Soil Fertility Lab	2
AGRON 515	Soil Genesis and Classification	3
AGRON 605	Soil and Environmental Chemistry	3
AGRON 635	Soil Conservation and Management	3
AGRON 645	Soil Microbiology	4
AGRON 746	Physical Properties of Soils	3

Two of the following courses:

CE/AGE 551	Hydrology	2
GEOL 520	Geomorphology	2
◆GEOG 350	Introduction to Climatology	3
GEOG 705	Remote Sensing Environment	3
GEOG 725	Geography of Water Resources	3
PHYS 114	General Physics II	4
Electives		15–20

◆Denotes university general education courses.

Research center, laboratory, and greenhouse facilities are used by the Department of Agronomy for both research and instruction.

Agronomy minor

Students enrolled in any primary undergraduate major will be admitted as a candidate for the agronomy minor program upon filing a notice of intent with the department's teaching office. Admission must be completed prior to enrollment in the final 9 hours of course work to receive certification of the minor. Upon filing for admission, an agronomy advisor will be assigned to assist students in selecting course work.

To earn an undergraduate minor in agronomy, students are required to complete 16 or 17 credit hours consisting of the following courses:

AGRON 305	Soils	4
AGRON 220	Crop Science	4
	or	
AGRON 501	Range Management	3

An additional 9 hours of agronomy courses numbered 300 or greater selected by the student in consultation with an agronomy advisor.

Agronomy courses

AGRON 220. Crop Science. (4) I. Principles underlying practices used in the culture of corn, grain sorghum, wheat, and soybeans. A basic course for majors in agronomy and others interested in crop production. Three hours lec. and two hours lab a week. Not open to students with credit in HORT 201.

AGRON 305. Soils. (4) I, II. Fundamental chemical, physical, and biological properties of soils; their formation, fertility, and management. Three hours lec. and two hours lab a week. Pr.: CHM 210.

AGRON 315. Properties of Soil. (1) I, II. Soil development and classification and the nature of soil physical properties. Three hours lec. and two hours lab a week for first five weeks of the semester. Not open to agriculture majors.

AGRON 330. Weed Management. (3) I. For those interested in crop production, crop protection, and agricultural education. Considers the origin of weeds, their relations to crops, and control systems emphasizing cultural practices and herbicides. Includes weed identification. Two hours lec. and two hours lab a week.

◆AGRON 335. Environmental Quality. (3) I. An examination and survey of topics in environmental quality. Includes classification of soil, air, and water pollutants and their interaction with the environment, including the human food chain. Discussion of remediation techniques, risk assessment, and environmental legislation. Three lectures a week. Pr.: CHM 210.

AGRON 340. Grain Grading. (2) I. Procedures for grading grains, emphasizing soybeans, corn, wheat, and sorghum. Identification and evaluation of kernel damage and other conditions determining grades of these grains. Four hours lab a week.

AGRON 350. Plant and Seed Identification. (2) II. Identification of crops and weeds by seed and vegetative characteristics. Analysis of seed samples for impurities. Four hours lab a week.

AGRON 360. Crop Growth and Development. (3) I. Comparative growth and development of warm- and cool-season monocot and dicot crops. Environmental influences on growth and development processes and management techniques to minimize stresses. Three lec. a week. Pr.: AGRON 220 and 305.

AGRON 375. Soil Fertility. (3) II. Detailed information on the plant nutrition, soil fertility, and fertilizer management of the essential macro- and micronutrients. The influence of numerous soil biological, physical, and chemical properties on plant nutrient availability to crops will be emphasized. Three hours rec. a week. Pr.: AGRON 220 and 305.

AGRON 385. Soil Fertility Laboratory. (2) II. Detailed information on (1) the chemical methods utilized in routine soil testing and plant analysis, (2) field soil sampling techniques, (3) fertilizer recommendations, and (4) fertilizer response functions. Soil chemistry and computer laboratory exercises are designed to reinforce the theoretical principles presented in lectures. One hour lec. and two hours lab a week. Pr.: AGRON 375 or conc. enrollment.

AGRON 400. Undergraduate Topics in Agronomy. (1–3) I, II, S. Special topics in agronomy not completely treated in other courses. Pr.: Consent of instructor.

AGRON 405. Internship in Agronomy. (1–3) I. Intern programs in various areas of agronomy. One hour credit for each four weeks of supervised and evaluated work experience with cooperating employers. A maximum of 3 hours may be applied to a B.S. in agronomy. May be repeated once for elective credit if second internship is different from the first. Pr.: AGRON 220 and 305.

AGRON 415. Soils Judging. (1) I. Techniques employed in writing descriptions of soil morphology and in classifying soils for intercollegiate soils judging. Six hours lab a week for the first half of the semester. Pr.: AGRON 305. May be repeated to a maximum of 2 hours.

AGRON 420. Field Course in Weed Science. (1) II. A laboratory and field course pertaining to weed identification, sprayer calibration, herbicide action, and herbicide performance. Pr.: AGRON 330 or equiv.

AGRON 450. Crops Team. (2) Grain grading, seed and plant identification, and seed analysis. Studies lead to participation in intercollegiate crops contest. Four hours lab per week.

AGRON 455. Computer Applications in Agronomy. (3) I, II. Application of computer technology to plant and soil science. Emphasis on use of current software in managing data and knowledge useful to crop production. Three hours lec. a week. Pr.: AGRON 220 and 305.

AGRON 501. Range Management. (3) I. Fundamental ecological principles of production, conservation, and use of grasslands. Application of these fundamental principles to range management. Three hours rec. a week.

AGRON 505. Biotechnology. (2) II. The use of biotechnology and molecular genetic approaches in plant and animal sciences. Emphasis is on the use of molecular techniques for plant and animal improvement. Two hours lectures per week. Pr.: BIOL 198. Cross-referenced as PLPTH 505.

AGRON 515. Soil Genesis and Classification. (3) II. Study of the factors and processes of soil formation, classification of soils according to soil taxonomy, and use of soil survey information. Required field trips. Two hours rec. and three hours lab a week. Pr.: GEOL 100 and AGRON 305 or consent of instructor.

AGRON 520. Grain Production. (3) I. An upper-level course for those interested in grain production in the Central Plains. Pest control, limiting factors, and planting factors will be considered in view of climatic conditions and crop plant growth habit. From this, a crop production strategy will be developed for each crop. Pr.: AGRON 220 and 375.

AGRON 550. Forage Management and Utilization. (3) II. Production and utilization of forage crops. Development of forage programs for livestock production, including pasture and stored forages. Three hours rec. a week. Pr.: AGRON 220 and junior standing.

AGRON 551. Forage Management and Utilization Laboratory. (1) II. Identification of forage species, techniques for estimating forage quality, forage physiology, and field trips. One two-hour lab a week. Pr.: Completion of or conc. enrollment in AGRON 550.

AGRON 560. Field Identification of Range and Pasture Plants. (1) I, in odd years. Identification of range pasture plants through exposure to them in their natural environment. Pr.: AGRON 220 or BIOL 210 or consent of instructor.

AGRON 599. Agronomy—The Profession. (1) II. An overview of opportunities, responsibilities, and challenges for the professional agronomist. Discussion of current topics and important issues in crops and soils, range management, and soil and water resources.

Undergraduate and graduate credit

AGRON 600. Crop Problems. (Var.) I, II, S. Studies may be chosen in: genetics, crop improvement, forages, ecology, weed control, plant physiology, or crop production.

AGRON 605. Soil and Environmental Chemistry. (3) I. A study of inorganic and organic chemistry of soils with a detailed examination of the solid, liquid, and gaseous phases. Includes discussions of mineral solubility, electrochemical and adsorption phenomena, acidity, salinity, and fertility. Emphasis is placed on the biogeochemical cycling of plant nutrients and important soil contaminants. Three hours rec. a week. Pr.: AGRON 375 or AGRON 305 and CHM 230.

AGRON 615. Soil Problems. (Var.) I, II, S. Studies may be chosen in: chemistry, physics, conservation, fertility, genesis, morphology, or classification.

AGRON 630. Principles of Crop Improvement. (3) II. Basic plant breeding techniques used to genetically improve crops for use by man and procedures to increase, distribute, and maintain breeding stocks and varieties. Two lec. and one two-hour lab a week. Pr.: AGRON 220 and ASI 500.

AGRON 635. Soil Conservation and Management. (3) I. Principles, mechanics, and prediction of water and wind erosion. Influence of soil erosion on soil productivity and environmental quality. Conservation management technologies for erosion control and sustaining soil productivity. Legislation and land-use planning for soil conservation. Course requires microcomputer skills. Two hours rec. and 1 three-hour lab a week. Pr.: AGRON 305.

AGRON 645. Soil Microbiology. (4) I. The nature and function of soil microorganisms in the soil ecosystem. The role of soil microbial activity to soil organic matter, mineral transformations, plant nutrition, and environmental quality. Three hours rec. and two hours lab a week. Pr.: AGRON 305 or BIOL 455.

AGRON 655. GIS and Site Specific Agriculture. (3) I. Introduction to spatial analysis and management of agricultural and environmental resources using geographic information systems (GIS) technology. Emphasis on collecting, displaying, and analyzing spatial or georeferenced soil, crop, or other land surface data. Two hours lecture, two hours lab, and one hour by appointment per week. Pr.: AGRON 220 and 305.

AGRON 660. Range Research Techniques. (3) I, in even years. Discussion of quantitative and qualitative procedures used to study vegetation. Includes application, advantages, and disadvantages of these methods. Use of statistical techniques for sampling, analysis, and presentation of data. Two hours rec. and one three-hour lab a week. Pr.: AGRON 501 and STAT 320.

AGRON 670. Range Management Problems. (Var.) I, II, S.

AGRON 681. Range Ecology. (3) II, in even years. Application of ecological principles to range ecosystem management. Study of plant-soil-animal interactions with rangelands, and discussion of plant succession, environmental influences, and ecological concepts. Two hours rec. a week and one lab credit consisting of field trips to representative range areas. Pr.: AGRON 501 and BIOL 529.

AGRON 716. Herbicide Interactions. (3) II, in even years. A study of systems and physiological processes in plants and soils as they affect herbicide fate and activity and are affected by herbicides. Research methodology and literature will also be discussed and evaluated. Pr.: AGRON 330 and BIOL 500 or equiv.

AGRON 720. Weed Ecology. (3) II, in odd years. A study of weed ecology topics including weed/crop interference, weed growth and development, herbicide resistance, biological control, and ecological approaches to weed management. Three lec. a week. Pr.: AGRON 330.

AGRON 746. Physical Properties of Soils. (3) II. The properties of soils as affected by their physical environment, including water content, water potential, temperature, aeration, flocculation-dispersion, and soil compaction. Three hours rec. a week. Pr.: AGRON 305.

AGRON 762. Range Grasses. (2) I, in even years. Field and laboratory study of range and pasture plants, with special emphasis on grasses and their distinguishing characteristics. One hour rec. and two hours lab a week. Pr.: BIOL 198 or 210.

AGRON 770. Plant Genetics. (3) I. Concepts and application of basic genetic principles in higher plants. Probability, linkage, chromosome aberrations, aneuploidy analysis, gene transfer in wide crosses, tissue culture and crop improvement, and genetics of disease resistance. Three hours rec. a week. Pr.: ASI 500.

AGRON 780. Orientation to Field Crop Breeding. (1) S, in odd years. A field-oriented course emphasizing the practical aspects of plant breeding and improvement of agronomic and horticultural crops. Operation, funding, and organization of the plant breeding program at Kansas State University and commercial breeding companies. Field tours included.

AGRON 790. Range Management Planning. (3) II, in odd years. Inventory and analysis of rangeland resources and development of detailed management plan. Emphasizes range management principles and practices useful in maximizing production from rangelands. Two hours rec. a week and one lab credit including field trips to ranch operations. Pr.: AGRON 501.

Animal Sciences and Industry

Jack G. Riley,* Head
Curtis L. Kastner,* Research Coordinator
John F. Smith,* State Leader Extension
Miles McKee, Teaching Coordinator

Professors Bolsen,* Brazle,* Brent, Cochran,* Davis,* Dikeman,* Drake, Dunham, Fung,* Harbers,* Hines,* Hunt,* Jeon,* Kastner,* Kropf,* Kuhl, Marsden,* McKee, Minton,* Nagaraja,* Nelssen,* Nichols, Penner, Riley,* Schafer, Schalles,* Spaeth, and Stevenson;* Associate Professors Aramouni,* Arns,* Blasi,* Bolze, Drouillard,* Goodband,* Hancock,* Kreikemeier, Martin, Raub,* Schmidt,* Shirley, J. Smith, S. Smith,* Swanson,* Tokach,* and Unruh;* Assistant Professors Beyer,* Boyle,* Gricger,* Herald,* Hoover, Marston, Michaels, Phebus,* Rozell, Schaake, Stokka,* and Titgemeyer;* Instructors Jackson and Lee; Assistant Instructors Flaherty, Marple, Scheele, and Turner; Emeriti professors Adams, Bassette, Call, Corah, Craig, Cunningham, Farmer, Francis, Good, Henderson, Koch, Morrill, Norton, Richardson, Roberts, Simms, Ward, Wheat, and Zoellner.

Animal sciences and industry

Bachelor of science in agriculture
126 semester hours

Courses in the department give instruction in selection, breeding, feeding, management, and marketing of beef and dairy cattle, horses, poultry, sheep, and swine, as well as instruction in the processing and use of the products these animals and birds provide. Options of study are available in animal products, business, communications, production-management, and science/pre-vet.

In addition to classrooms, office space, and laboratories located in Weber and Call Halls, the department maintains several animal and poultry units within easy access to the campus that house the beef and dairy cattle, horses, swine, sheep, and poultry used for teaching and research.

Students in animal sciences and industry must complete university general education requirements as specified by the College of Agriculture. See the College of Agriculture General Requirements section.

General requirements

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
GENAG 101	Ag Orientation	1
◆ECON 110	Principles of Macroeconomics	3
◆CHM 210	Chemistry I	4
	or	
◆CHM 110	General Chemistry	3
	and	
CHM 111	General Chemistry Lab	1
◆BIOL 198	Principles of Biology	4
ASI 102	Principles of Animal Science	3
ASI 105	Animal Sciences and Industry	1
ASI 106	Dairy/Poultry Science	1
ASI 580	Animal Sciences & Industry Seminar	1
◆ACCTG 231	Accounting for Business Operations	3
	or	
AGEC 308	Farm and Ranch Management*	3
Humanities and/or social sciences electives**		9

*AGEC 308 may be substituted for ACCTG 231 in the production-management option only.

**To be selected from the approved list in consultation with advisor.

Options

Additional courses required for specific options:

Animal products option

ASI 302	Introduction of Food Science	3
BIOL 455	Microbiology	4
MATH 100	College Algebra	3
◆BIOCH 265	Introductory Organic and Biochemistry	5
PHYS 115	Descriptive Physics	5
Agriculture electives		4–8
Agricultural economics or business electives		4–6
Communication elective		3
Mathematics/statistics/computer science electives		6
ASI 318	Fundamentals of Nutrition	3
ASI 350	Meat Science	3
	or	
ASI 405	Fundamentals of Milk Processing	3
ASI 607	Food Microbiology	4
ASI 690	Principles of HACCP	1
ASI 695	Quality Assurance of Food Products	3

Select 18 hours from the following:

ASI 305	Fundamentals of Food Processing	3
ASI 315	Livestock and Meat Evaluation	3
ASI 361	Meat Processing	2
ASI 370	Principles of Meat Evaluation	2
ASI 395	Classification, Grading, and Selection of Meats	2
ASI 430	Food Products Evaluation	3
ASI 500	Genetics	3
ASI 533	Anatomy and Physiology	4
ASI 599	Animal Science Internship	1-3
ASI 605	Fresh Meat Operations	3
ASI 608	Dairy Foods Processing and Technology	3
ASI 610	Processed Meat Operations	2
ASI 630	Egg Science	2
ASI 635	Poultry Meat Technology	2
ASI 671	Meat Selection and Utilization	2
ASI 777	Meat Technology	4
ATM 540	Introduction to Food Engineering	3
ATM 541	Introduction to Food Engineering Laboratory Exercises	1

Select one of the following:

ASI 515	Beef Science	3
ASI 524	Sheep Science	3
ASI 535	Swine Science	3
ASI 621	Dairy Cattle Management	3
ASI 645	Poultry Management	3
ASI 694	Food Plant Management	3

Business option

◆AGEC 120	Agricultural Economics and Agribusiness	3
MATH 100	College Algebra	3
ASI 500	Genetics	3
ASI 533	Anatomy and Physiology	4
◆ACCTG 241	Accounting for Investing and Financing	3
Agricultural electives		6–12
Business electives		6
Agricultural economics electives		9–12
Mathematics/statistics/computer science elective		3
Communication elective		3
ASI 318	Fundamentals of Nutrition	3
ASI 320	Principles of Feeding	3
ASI 400	Farm Animal Reproduction	4

Select one of the following:

ASI 350	Meat Science	3
ASI 361	Meat Processing	2
ASI 601	Milk Secretion	3
ASI 630	Egg Science	2

Select one of the following:

ASI 315	Livestock and Meat Evaluation	3
ASI 405	Fundamentals of Milk Processing	3
ASI 607	Food Microbiology	4
ASI 635	Poultry Meat Technology	2

Select two of the following:

ASI 515	Beef Science	3
ASI 521	Horse Science	3
ASI 524	Sheep Science	3
ASI 535	Swine Science	3
ASI 621	Dairy Cattle Management	3
ASI 645	Poultry Management	3

Communications option

MATH 100	College Algebra	3
ASI 500	Genetics	3
ASI 533	Anatomy and Physiology	4
Agriculture electives		8–16
Agricultural economics or business elective		2–3
Mathematics/statistics/computer science elective		3
◆MC 235	Mass Communications in Society	3
MC 305	Radio-Television and Society	3
MC 400	News and Feature Writing	3
MC 440	Editing and Design	3
MC 500	Advanced News and Feature Writing	3
MC 565	Law of Mass Communications	3
Communications electives		6
ASI 320	Principles of Feeding	3
ASI 400	Farm Animal Reproduction	4

Select one of the following:

ASI 350	Meat Science	3
ASI 361	Meat Processing	2
ASI 601	Milk Secretion	3
ASI 630	Egg Science	2

Select two of the following:

ASI 315	Livestock and Meat Evaluation	3
ASI 405	Fundamentals of Milk Processing	3
ASI 510	Animal Breeding Principles	3
ASI 607	Food Microbiology	4
ASI 635	Poultry Meat Technology	2
ASI 655	Behavior of Domestic Animals	3

Select two of the following:

ASI 515	Beef Science	3
ASI 521	Horse Science	3
ASI 524	Sheep Science	3
ASI 535	Swine Science	3
ASI 621	Dairy Cattle Management	3
ASI 645	Poultry Management	3

Production-management option

◆AGEC 120	Agricultural Economics and Agribusiness	3
ASI 500	Genetics	3
ASI 533	Anatomy and Physiology	4
◆BIOCH 265	Introductory Organic and Biochemistry	5
MATH 100	College Algebra	3
Agriculture electives		6–12
Agricultural economics or business electives		9–12
Mathematics/statistics/computer science elective		3
Communication elective		3
ASI 318	Fundamentals of Nutrition	3
ASI 320	Principles of Feeding	3
ASI 400	Farm Animal Reproduction	4
ASI 510	Animal Breeding Principles	3

Select one of the following:

ASI 350	Meat Science	3
ASI 361	Meat Processing	2
ASI 601	Milk Secretion	3
ASI 630	Egg Science	2

Select one of the following:

ASI 315	Livestock and Meat Evaluation	3
ASI 405	Fundamentals of Milk Processing	3
ASI 607	Food Microbiology	4
ASI 635	Poultry Meat Technology	2

Select three of the following:

ASI 515	Beef Science	3
ASI 521	Horse Science	3
ASI 524	Sheep Science	3
ASI 535	Swine Science	3
ASI 621	Dairy Cattle Management	3
ASI 645	Poultry Management	3
ASI 655	Behavior of Domestic Animals	3

Science/pre-veterinary option

ASI 318	Fundamentals of Nutrition	3
ASI 320	Principles of Feeding	3
ASI 400	Farm Animal Reproduction	4
Agriculture electives		9
Agricultural economics or business elective		2–3
Communication elective		3

Select 7 hours from the following:

ASI 500	Genetics	3
ASI 533	Anatomy and Physiology	4
BIOL 455	Microbiology	4
BIOL 510	Embryology	3
BIOL 511	Embryology Laboratory	1

Select 12 hours from the following:

◆CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Laboratory	2

Select two of the following:

PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
◆STAT 340	Biometrics I	3
MATH 205	General Calculus and Linear Algebra	3

Select one of the following:

ASI 350	Meat Science	3
ASI 361	Meat Processing	2
ASI 601	Milk Secretion	3
ASI 630	Egg Science	2

Select two of the following:

ASI 315	Livestock and Meat Evaluation	3
ASI 405	Fundamentals of Milk Processing	3
ASI 510	Animal Breeding Principles	3
ASI 607	Food Microbiology	4
ASI 635	Poultry Meat Technology	2
ASI 655	Behavior of Domestic Animals	3

Select two of the following:

ASI 515	Beef Science	3
ASI 521	Horse Science	3
ASI 524	Sheep Science	3
ASI 535	Swine Science	3
ASI 621	Dairy Cattle Management	3
ASI 645	Poultry Management	3

◆Denotes university general education courses.

Animal sciences and industry minor

An academic minor in animal sciences and industry can be earned by completing a minimum of 15 hours of credit with the ASI designation. A minimum of two courses must be at the 300 level or above. An additional two courses must be at the 500 level or above. The courses that comprise the minor will be determined by an advisor in the Department of Animal Sciences and Industry and the student.

Animal sciences and industry courses

ASI 102. Principles of Animal Science. (3) I, II. Basic principles which apply to animal agriculture; survey of the industry; types, purposes, and products of livestock; principles of breeding, selection, nutrition, lactation, reproduction, management, and marketing. Three hours rec. a week. ASI 105 and 106 are companion courses.

ASI 105. Animal Sciences and Industry. (1) I, II. A study of the breeding and market types and classes of livestock including a comparison of the live animal and carcass evaluation. Two hours lab a week. Pr.: ASI 102 or conc. enrollment.

ASI 106. Dairy and Poultry Science. (1) I, II. Introduction to the dairy and poultry industries. Two hours lab a week.

ASI 110. Bovine Artificial Insemination. (1) On sufficient demand. Designed to make student proficient in artificially inseminating the cow.

ASI 300. Principles of Livestock Feeding. (3) II. Practical application of nutritional principles to the feeding of livestock; feedstuff evaluation; nutritive requirements; basic ration formulation and evaluation. Not open to ASI majors other than communication option. Student cannot apply credit for both ASI 300 and 320 toward a B.S. degree. Pr.: CHM 110 and CHM 111.

ASI 301. Farrier Science. (2) I. Application of farrier's principles and practices. The anatomy and physiology of the lower leg and hoof are thoroughly studied and basic static and dynamic biomechanics of the horse are addressed. Corrective, therapeutic and performance, and specific shoeing and trimming techniques are practiced. One hour lecture and four hours lab a week. Pr.: Consent of instructor.

ASI 302. Introduction to Food Science. (3) I, II. This course is the beginning course in food science designed to acquaint the student with the breadth and scope of the food industry and the role of science in the preservation, processing, and utilization of foods. Three hours lec. a week.

◆ASI 303. History and Attitudes of Animal Use. (3) II. A short history of animal use and the livestock industry; attitudes towards animals; the symbiotic bond between humans and animals; the contributions from animals of food, fiber, work, and recreation; animal well-being; the interaction of livestock production and the environment; and ethical issues about using animals for research, food, and recreation. Three hours of lec./rec. a week. Interactive discussion will be emphasized, no prerequisites.

ASI 305. Fundamentals of Food Processing. (3) II. The study of some basic ingredients used in food processing, principles of preserving and processing of foods, and food packaging. Food science and industry majors should take before the senior year. Taught in cooperation with the Departments of Horticulture, and Grain Science and Industry. Pr.: A course in chemistry.

ASI 310. Poultry and Poultry Product Evaluation. (2) I, in even years. Apply knowledge of physical and anatomical characteristics for evaluating poultry for egg and meat production. Evaluation of ready-to-cook poultry products as well as eggs on their exterior, interior, and broken-out appearance according to the latest USDA standards. Two two-hour labs a week. Pr.: ASI 106.

ASI 315. Livestock and Meat Evaluation. (3) I, II. Evaluation of slaughter livestock and their carcasses as related to economically efficient production of red meat. Evaluation of breeding livestock on visual appraisal and performance records. A study of growth and the effects of nutrition, environment, and hormones on growth patterns. Breeds of livestock and performance programs will be studied. One hour lec. and four hours lab a week. Pr.: ASI 102 and 105; or consent of instructor.

ASI 318. Fundamentals of Nutrition. (3) I, II. Elementary principles of comparative nutrition of farm animals. Three hours rec. a week. Pr.: CHM 110.

ASI 320. Principles of Feeding. (3) I, II. Application of basic nutrition principles to the feeding of beef cattle, sheep, and swine; feedstuff evaluation; nutrient requirements; ration formulation and practical feeding problems. Two hours rec. and two hours lab a week. Pr.: ASI 318.

ASI 325. Conformation and Performance Appraisal of Horses. (2) II. Evaluation of conformation and athletic performance of horses. The use of records in selection and the influence of heredity, environment, and training on conformation and performance is addressed. Students will learn to give an oral justification of their evaluations. Four hours lab a week.

◆ASI 330. The Horse in American Culture. (2) II. A general education course using the horse as an organizing theme for exploration of many of the aspects of evolution, comparative physiology, economics, ethics, multiculturalism and esthetics. Designed for students in any major. Same as CS 300.

ASI 340. Principles of Meat Science. (2) I, II, S. An overview of the meat industry for off-campus students using a videotaped format. Food science and animal science majors cannot substitute this course for ASI 350. Pr.: A course in biology is recommended.

ASI 345. Beginning Horse Training and Management. (2) I. Inherited and learned behavior of the horse. Development of methods to communicate with the horse. Emphasis on handling and safety techniques. Opportunities to observe and practice advanced training techniques used in saddling and riding. Four hours lab a week.

ASI 350. Meat Science. (3) I, II. An introduction to the red meat industry relating the fundamental properties of muscle structure, chemistry, and physiology to meat quality, composition, processing, nutritional value, and marketing. The laboratory will demonstrate the conversion of animals to meat and by-products, and meat processing technology. Two hours lec. and two hours lab a week. Pr.: BIOL 198.

ASI 361. Meat Processing. (2) I, II. A student participation course in processing live animals into meat and by-products. Interrelates all phases of modern slaughter techniques, inspection, and related operations. Pr.: ASI 350.

ASI 370. Principles of Meat Evaluation. (2) I. The use of subjective and objective standards to evaluate beef, lamb, and pork carcasses and wholesale cuts for both quality and yield of edible portion as they relate to value and consumer acceptance.

ASI 385. Wool Grading and Evaluation. (1) I. A study of factors determining the commercial grades of wool and the desired fleece qualities of sheep, practice in judging and grading wool. Three hours lab a week. Pr.: ASI 102.

ASI 395. Classification, Grading, and Selection of Meats. (2) I. Advanced study in the evaluation and classification of carcasses and wholesale cuts of beef, lamb, and pork. Application of grade standards to beef, lamb, and pork carcasses. Three hours lab a week. Pr.: ASI 370.

ASI 396. Dairy Cattle Judging. (2) II. An introduction to the principles of evaluating dairy cattle on the basis of their physical characteristics. Interpretation of the official dairy cow unified score card. Training includes preparation and presentation of oral defense on one's placing of four cow classes. Pr.: ASI 102 and 106.

ASI 399. ASI Quadrathalon. (0–1) II. Active participation in the ASI Quadrathalon involving oral presentations, written exams, practical application of animal knowledge, and a quiz bowl. Fifteen hours for presentations will be designated each spring. No more than 2 credits earned in this course may apply towards graduation.

ASI 400. Farm Animal Reproduction. (4) I. Basic reproductive anatomy and physiology of cattle, horses, pigs, poultry, and sheep during the first half of the semester provides a solid basis for reproduction management topics which occupy the second half of the course. Three hours rec. and three hours lab a week. Pr.: ASI 102.

ASI 401. Artificial Insemination in Swine. (1) II. Methods and objectives of artificial insemination in pork production including physiology of sperm production; semen collection, evaluation and preservation; estrous cycles and estrus detection; and collection and interpretation of data associated with artificial insemination. Three hours lab a week. Pr.: ASI 400.

ASI 405. Fundamentals of Milk Processing. (3) I. A study of fundamentals of processing, quality assurance, inspection, and marketing of fluid milk and related products in a modern market milk enterprise. Two hours lec. and one three-hour lab a week. Pr.: BIOL 198.

ASI 420. Advanced Dairy Cattle Judging. (1) I. Three hours lab a week. Pr.: ASI 396.

ASI 422. Livestock Sales Management. (1) On sufficient demand. Hands-on experience in the planning, promotion, and production of a purebred livestock sale. Pr.: Junior standing.

ASI 430. Food Products Evaluation. (3) II. Fundamentals of sensory evaluation of dairy, poultry products, meat, and other agricultural food products. Study of taste, smell, texture, visual appearance, and other senses related to organoleptic examination and its application to the food processing industry. Introduction to sensory testing methods, including sampling techniques and test forms. Two hours lec. and two hours lab a week. Pr.: ASI 302.

ASI 445. Advanced Horse Training and Management. (2) II. Students will further develop skills acquired in ASI 345. Students will learn how to utilize advanced training practices and applications to enhance the training and performance of horses. Four hours lab a week. Pr.: ASI 345.

ASI 450. Principles of Livestock Selection. (2) I. Origin, development, characteristics, and adaptation of different breeds of livestock, with special emphasis on the selection of market and breeding animals. Four hours lab a week. Pr.: ASI 315.

ASI 470. Form and Function in Livestock. (2) I. A detailed study of animal form and type; influence of type related to function; special training in presenting orally the relative merits of beef cattle, sheep, swine, and horses. Pr.: ASI 450.

ASI 490. Microcomputer Applications in Animal Sciences and Industry. (3), I, II. Applications of microcomputer techniques to the solutions of problems in animal science and related food industries. Includes use of existing software packages for breakeven analysis, animal identification and health records, feed ration analysis, farm/ranch accounting, and electronic communication with agriculture computer services. Current trends in farm computer use (hardware and software) will also be covered. Two hours lec. and two hours lab a week. Pr.: Junior standing.

ASI 500. Genetics. (3) I, II, S. An introduction to Mendelian, molecular, quantitative and population genetics. Three hours lec. a week. Pr.: BIOL 198 or 210.

ASI 501. Food Chemistry. (3) II. An in-depth coverage of the chemical structures of major food components and the chemical reactions occurring during storage and processing. Two hours lec. and three hours lab a week. Pr.: CHM 350 and BIOCH 521.

ASI 503. Topics in Comparative Pathology. (1–3) I, II, S. Selected topics in diseases of laboratory animals, wildlife, and fish for non-veterinary students. Pr.: BIOL 198.

ASI 504. Equine Reproduction Management. (2) II. Theory and practice in reproductive management and breeding techniques of the horse. Includes basic reproductive physiology of the stallion and mare, demonstration and practice in semen collection and processing, teasing systems, natural and artificial breeding techniques, management, and record keeping. Six hours lab a week. Pr.: ASI 400 and senior standing.

ASI 510. Animal Breeding Principles. (3) I, II. The genetic principles in evaluation, selection, and mating systems used in beef, dairy, sheep, swine, poultry, and horse breeding. Intended for ASI majors. Three hours lec. a week. Pr.: ASI 500.

ASI 512. Bovine Reproductive Technologies. (2) I. Reproductive technologies used in management of cattle including the physiology of the estrous cycle, embryo viability, and fetal development. Practical training in reproductive management technique. One hour lec. and five hours lab a week. Pr.: ASI 400, senior standing, and consent of instructor.

ASI 515. Beef Science. (3) I, II. A comprehensive course covering all phases of the beef cattle industry. Practical application of nutrition, breeding, physiology of reproduction, risk management, merchandising, and related areas. Special emphasis on management systems of raising, growing, and finishing beef cattle. Pr.: Senior standing.

ASI 521. Horse Science. (3) II. A study of the horse industry in the U.S., breed profiles, anatomy and evaluation, nutrition reproduction, growth and development, health, exercise physiology, facilities and equipment, business considerations. Three hours lec. a week. Pr.: Junior standing.

ASI 524. Sheep Science. (3) I. Application of scientific management principles to the sheep industry. Breeding, reproduction, nutrition, health, facilities, and economic aspects as related to sheep production. Two hours lec. and two hours lab a week. Pr.: Junior standing.

ASI 533. Anatomy and Physiology. (4) II. General anatomy and physiology of the domestic animals. Three hours rec. and three hours lab a week.

ASI 534. Introduction to Pharmacology of Farm Animals. (2) II, in even years. The study of the basic principles of pharmacology as related to the proper and safe use of drugs and chemicals by tbe livestock industry.

ASI 535. Swine Science. (3) I, II. Application of basic scientific principles to the economical production of pork. Recommendations are made in breeding, reproduction, nutrition, health, housing, marketing, and management of swine production units of varying sizes. Two hours lec. and two hours lab a week. Pr.: Senior standing.

ASI 540. Principles of Animal Disease Control. (3) II. A study of the factors that influence animal health and disease control. For students majoring in agriculture and other fields. Three hours lec. a week. Pr.: ASI 533.

ASI 580. Animal Sciences and Industry Seminar. (1) I. Open only to senior students majoring in animal sciences and industry. One hour rec. a week.

ASI 595. Contemporary Issues in Animal Science and Agriculture. (3) II. The development and management of current issues affecting animal agriculture and science in three primary areas: (1) how do issues develop; (2) the political aspects of issues; and (3) the development of expertise based on objective assessment. Current issues such as animal welfare/rights, environment, genetic engineering, etc., will be used to provide students with practical learning experiences. Pr.: Junior standing.

ASI 599. Animal Science Internship. (1–6) I, S. Industry work-study experiences in beef cattle, sheep, dairy cattle, swine, horse, or poultry production operations or in animal food products plants. Pr.: Permission of supervising faculty member.

ASI 601. Milk Secretion. (3) I. Anatomy and histology of the mammary gland. Physiology of lactation, milk constituents, and management practices that alter quality and quantity. Contemporary milking practices and mastitis control. Two hours lec. and two hours lab a week. Pr.: ASI 106, 318, and 533.

ASI 603. Food Science Internship. (1–6) I, II, S. Supervised professional field experience in food science. Pr.: Consent of supervising instructor. Same as FN 603.

ASI 605. Fresh Meat Operations. (3) I. Provides information and exposure to fresh meat operations, including: fabrication, yields, costs, quality assurance, packaging, marketing of fresh meat and by-products. Two hours lec. and three hours lab a week. Pr.: ASI 350.

ASI 607. Food Microbiology. (4) I. This course deals with the identification, enumeration, and characterization of bacteria, yeast, and mold associated with foods and food processing. Effects of physical and chemical agents on microorganisms will be studied. Microbiological problems in food spoilage, food preservation, food fermentation, and food-borne diseases will be discussed. Two hours lec. and two two-hour labs a week. Pr.: BIOL 455.

ASI 608. Dairy Foods Processing and Technology. (3) II. The fundamental technologies used to process high-quality dairy foods using freezing, heat membrane, and pressure technologies. Changes in milk chemistry, microbiology, and structure will be emphasized during the processing of butter, soft and hard cheeses, concentrated milks, ice cream, and yogurt. Two hours lec. and one three-hour lab a week. Pr.: BIOL 455.

ASI 609. Dairy Cattle Nutrition. (2) I. Application of principles of nutrition to feeding dairy cattle; least cost formulation of balanced rations; discussion of current dairy cattle nutrition research. One hour lec. and two hours lab a week. Pr.: ASI 320.

ASI 610. Processed Meat Operations. (2) II. An intensive course in processed meats, relating the science, technology, and quality control of curing, smoking, and sausage manufacture. One hour rec. and two hours lab a week. Pr.: ASI 350.

ASI 611. Beef Cattle and Sheep Nutrition. (2) II. A detailed study of the nutrient requirements of beef cattle and sheep for various stages of growth, reproduction, and lactation. Emphasis will be given to interrelationships between nutrition, disease, management, and environment. Diets will be formulated using a wide range of feed ingredients to produce optimum production at minimum cost. Current beef cattle and sheep nutrition research will also be reviewed. One hour lec. and two hours lab a week. Pr.: ASI 320.

ASI 612. Horse Nutrition. (2) I. A detailed study of the nutrient requirements of horses for various stages of growth, work, reproduction, and lactation. Ration formulation using various feed ingredients. Relationships among nutrition, feed-related diseases, environment, and management. Review of current horse nutrition research. One hour lec. and two hours lab a week. Pr.: ASI 320.

ASI 614. Swine and Poultry Nutrition. (2) I. A detailed study of nutrient requirements of swine and poultry, for various stages of production. Lectures will include interrelationships between nutrition and other factors (environment, management, and disease) that affect performance. Labs will emphasize evaluation of feed ingredients, diets, premixes, and base mixes. One hour lec. and two hours lab a week. Pr.: ASI 320.

ASI 615. Range Livestock Nutrition and Management. (2) II. A detailed study of nutritional management concepts relevant to range livestock production. Emphasis will be directed toward discussion of range forage quality, range forage intake, nutrient requirements of range livestock, supplementation systems, grazing systems, computer-aided management procedures, stocking rates, and reproductive management. Two hours lec. a week. Pr.: ASI 320.

ASI 620. Livestock Production and Management. (2) II. Student involvement in laboratory exercises related to practical livestock production and management. One hour rec. and four hours lab a week. Pr.: Appropriate ASI course (515, 521, 525, or 535).

ASI 621. Dairy Cattle Management. (3) II. Integration of biologic and economic aspects of dairy production with dairy farm organization, planning, operation, and analysis. Field trips, diary farm analysis and case studies will be used to supplement lec. material. Two hours rec., two hours lab a week. Pr.: ASI 102 and 106, senior standing.

ASI 630. Egg Science. (2) I, in even years. Emphasis on the technical problems in processing and distribution of shell eggs and egg products. This course covers the chemistry and microbiology of shell eggs and egg products. Processing operations and basic principles of quality assurance are covered. Importance of new product development is discussed. Pr.: ASI 106 and 302.

ASI 635. Poultry Meat Technology. (2) II, in odd years. Emphasis on the many technical problems that exist between production and consumption during the processing and marketing of poultry meat and poultry meat products. Two hours lec. a week. Pr.: ASI 106 and 302.

ASI 645. Poultry Management. (3) II, in odd years. A detailed study of the production and management practices involved in commercial poultry and game bird enterprises. Two hours rec. and one three-hour lab a week. Pr.: ASI 102, 106, and junior standing.

ASI 655. Behavior of Domestic Animals. (3) I. Behavior associated with domestication. Effects of selective breeding, physical and social environments, and developmental stage on social organization, aggressive behavior, sexual behavior, productivity, and training of domestic animals. Physiology of behavior and abnormal behavior considered briefly Two hours lec. and two hours lab a week. Pr.: BIOL 198 and junior standing.

ASI 661. Animal Sciences and Industry Problems. (1–3) I, II, S. Work offered in: animal breeding, animal nutrition, beef cattle production, dairy production, horse production, livestock evaluation, meats, poultry, sheep production, swine production. Pr.: Consent of instructor.

ASI 671. Meat Selection and Utilization. (2) I. Emphasis on meat cut selection criteria and identification, grades, fabricated meat, institutional cuts, specification writing, preservation, and meat preparation. One hour lec.-rec. and two hours lab a week. Pr.: CHM110 and CHM 111.

ASI 690. Principles of HACCP. (1) II. Introduction to the Hazard Analysis and Critical Control Point system and its application in the food industry. Three hours lec., four hours working groups, and one hour rec. per week for a three-week period. Pr.: CHM 110 and BIOL 198. Cross-listed with FN 690.

ASI 694. Food Plant Management. (3) I. The integration of food science knowledge in managing a food processing operation to produce high quality food products. Two hours lec. and two hours lab a week. Pr.: Senior standing.

ASI 695. Quality Assurance of Food Products. (3) I. The role of the control laboratory in maintaining standards and quality of dairy and food products and ingredients. Tests and techniques for evaluating quality and sanitation and for compliance with regulatory requirements. Two hours rec. and one three-hour lab a week. Pr.: One course in bacteriology.

ASI 710. Physiology of Reproduction in Farm Animals. (3) I. This course offers an in-depth study of the physiological aspects of reproduction in farm animals including endocrine interrelationships controlling reproductive cycles and gamete production. Periodic demonstrations deal with specialized reproductive anatomy of farm animals, experimental techniques used in animal reproduction, and contemporary animal production practices. Three hours lec. a week. Pr.: ASI 400.

ASI 713. Rapid Methods and Automation in Microbiology. (2) Spring intersession. Rapid methods and automation is a dynamic area in applied microbiology dealing with the study of improved methods in the isolation, detection, characterization, and enumeration of microorganisms and their products in clinical, food, industrial, and environmental samples. The knowledge and techniques of this course are useful for students interested in medical, food, industrial, and environmental microbiology for early detection of beneficial as well as harmful microorganisms in their work.

ASI 720. Anaerobic Bacteriology. (2) II, in even years. Study of anaerobic bacteria, anaerobiosis, description of anaerobic techniques, and physiology and biochemistry of anaerobes of natural environment including gastrointestinal tract, and of veterinary, medical, and industrial importance. Two hours lec. a week. Same as BIOL 720. Pr.: BIOL 455.

ASI 725. Food Analysis. (3) I. Principles, methods, and techniques necessary for quantitative, instrumental, physical, and chemical analyses of food and food products for off-campus students using an audio/video taped format. The analytical principles will be related to standards and regulations for food processing. Two hours lec. and three hours lab a week. Pr.: ASI 501.

ASI 727. Chemical Methods of Food Analysis. (2) I. Methods for quantitative, physical, and chemical analyses of foods and food products. Analytical techniques covered will include spectroscopy, chromatography, mass spectrometry, immunochemistry, and atomic aborption. The analyses will be related to standards and regulations for food processing. Meets during first half of semester. Three hours lec. and three hours lab a week. Pr.: ASI 501 or FN 501.

ASI 730. Silage Technology. (2) I. A study of silage fermentation, nutrient conservation, aerobic deterioration process, factors affecting silage quality, and chemical analysis used to evaluate silage. Discussion of techniques used in silage research and assigned readings within the silage literature. Two hours lec. a week. Pr.: ASI 320.

ASI 749. Advanced Animal Breeding. (3) II. Application of genetic principles to livestock improvement, selection methods, mating systems, heritability estimates, and methods of analyzing genetic data. Three hours lec. a week. Pr.: ASI 500 and three hours in statistics.

ASI 777. Meat Technology. (4) II. Meat composition, meat product safety and spoilage, quality assurance, meat processing techniques, sausage and formed products, color, packaging, plant planning and organization, field trip. Three hours lec. and three hours lab a week. Pr.: ASI 350 and 361; senior or graduate standing.

ASI 791. Advanced Application of HACCP Principles in the Meat and Poultry Industry. (1) II. Analysis of physical, chemical, and biological hazards in meat and poultry products and application in developing HACCP plans for the meat and poultry industry. Three hours lec., four hours working groups, and one hour rec. per week for a three week period. Pr.: BIOL 455, and ASI 690 or FN 690.

ASI 792. Advanced Principles of Hazard Analysis and Risk Assessment. (1) II. Application of the principles of hazard analysis and risk assessment in the HACCP system. Three hours lec., two hours working groups, and one hour rec. per week for a three-week period. Pr.: BIOL 455, and FN 690 or ASI 690. Cross-listed with FN 792.

ASI 793. Validation of HACCP Plans. (1) II. Evaluation of control parameters and control methods in identifying HACCP critical control points and validating the effectiveness of critical control points, critical limits, monitoring tools, corrective action procedure, record keeping, and verification procedures in addressing biological, chemical, and physical hazards that may be present in food products. Three hours lec., two hours working groups, and one hour rec. per week for a three-week period. Pr.: BIOL 455, and ASI 690 or FN 690. Cross-listed with FN 793.

ASI 794. HACCP and Inspection. (1) II. Application of the principles of the hazard analysis and critical control point system to the inspection of food products. Three hours lec., two hours working groups, and one hour rec. per week for a three-week period. Pr.: BIOL 455, and ASI 690 or FN 690. Cross-listed with FN 794.

ASI 799. Graduate Internship in Animal Sciences and Industry. (1–4) I, S. In-depth work-study experiences in beef cattle, sheep, dairy cattle, swine, horse, or poultry production operations or in animal food products plants. Pr.: Permission of supervising faculty member.

Communications

R. R. Furbee, Head

Professors Atkinson, Brandsberg, and Terry; Associate Professors Baker, Frank, Furbee, and Ward; Assistant Professors Boone and Flores; Instructor Ballou; Emeriti Professors Burke, Graham, Medlin, Thomas, Titus, Unruh, and Warner; Associate Professors Buchanan, Dexter, Jorgenson, McGlashon, Peck, and Wright; Assistant Professors Kuehn, Nelson, and Tennant.

Agricultural journalism

Bachelor of science in agriculture
127 semester hours

The agricultural journalism major prepares students for various communications positions in newspaper, magazine, radio-television, advertising, public relations, and agricultural information. Students in the major have opportunities to work with radio facilities, desktop publishing equipment, cameras, and photo scanning equipment. The major focuses on helping students establish industry ties.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section. Students majoring in the curriculum take the following courses:

General requirements

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking 1A	2
GENAG 101	Ag Orientation	1
MATH 100	College Algebra	3
◆ECON 110	Principles of Macroeconomics	3
◆CHM 210	Chemistry I	4
	or	
◆CHM 110	General Chemistry	3
	and	
CHM 111	General Chemistry Lab	1
Humanities and/or social sciences		12

Departmental requirements

Students must complete a total of 30 credit hours in agricultural courses. Area requirements are:

Agriculture core

AGCOM 110	Introduction to Agricultural Communications	1
AGCOM 410	Agricultural Student Mazaine	2

Select any four required courses from the following:

AGRON 305	Soils	4
HORT 201	Introductory Horticultural Science	4
	or	
AGRON 220	Crop Science	4
ASI 102	Principles of Animal Science	3
◆AGEC 120	Agricultural Economics and Agribusiness	3
Any course in biological and agricultural engineering		
ENTOM 300	Economic Entomology	3
	or	
ENTOM 305	Livestock Entomology	2
	or	
ENTOM 320	Horticultural Entomology	3
PLPTH 500	Principles of Plant Pathology	3
◆FOR 375	Introduction to Natural Resource Management	3
ASI 302	Introduction to Food Science	3

Agricultural specialization
In consultation with the advisor, the student will decide to study one area of agriculture in depth. The student will take two courses above the introductory level (advanced courses are defined as those with a prerequisite in that agriculture department).

Agricultural electives
Students may choose any other courses in the College of Agriculture to complete the 30 hours of agriculture.

Journalism
Students must complete a minimum of 30 hours in journalism and mass communications courses. Maximum journalism hours allowed is 36.

Journalism core
These 18 hours are required of all students. Enrollment in all skills courses requires a minimum of 2.5 GPA based on completion of at least 30 hours at the 100 level or above.

◆MC 235	Mass Communication in Society	3
MC 400	News and Feature Writing	3
MC 440	Editing and Design	3
MC 500	Advanced News and Feature Writing	3
MC 565	Law of Mass Communications	3
MC 595	Mass Communications Research	3

Journalism electives
The remaining 12 to 18 hours in journalism may be chosen by the students in consultation with the faculty advisor.

Biological sciences
Required:

BIOL 198	Principles of Biology	4
	or	
BIOL 210	General Botany	4

One of the following:

ASI 500	Genetics	3
BIOL 201	Organismic Biology	3
BIOL 303	Ecology of Environmental Problems	3
BIOL 320	Economic Botany	3

Statistics and computer science
Select one of the following:

CIS 101–104	Introduction to Personal Computing	3
CIS 200	Fundamentals of Computer Programming	2
	and	
Computer language lab (200 level)		2
STAT 340	Biometrics I	3
STAT 350	Business and Economic Statistics I	3
	or	
STAT 330	Elementary Statistics for the Social Sciences	3
ASI 490	Micromputer Applicators in Animal Science and Industry	3

Physical science
Select one course from the following:

◆BIOCH 110	Biochemistry and Society	3
BIOCH 265	Introduction to Organic and Biochemisry	5
BIOCH 521	General Biochemistry	3
◆CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 531	Organic Chemistry I	3
◆GEOL 100	Earth in Action	3
◆GEOG 220	Environmental Geography I	4
◆AGRON 335	Environmental Quality	3

Business administration and agricultural economics
Required:

◆ACCTG 231	Accounting for Business Operations	3

One of the following:
A course in business or AGEC with a 300 or higher course number.

◆Denotes university general education courses.

Communications courses

AGCOM 110. Introduction to Agricultural Communications. (1) I. Introduction to agricultural communications programs, activities, careers, and trends. Required of all students beginning a major in agricultural communications. One hour of lec. per week.

AGCOM 400. Agricultural Business Communications. (3) II. Written communications as used in agricultural industries. A writing course emphasizing the tools and techniques of writing memos, letters, order forms, short and long reports, proposals, presentations, advertisements, and press releases. Three hours lec. per week. Pr.: ENGL 100

AGCOM 410. Agricultural Student Magazine. (1–5) I, II. Planning, interviewing, and preparing stories, headlines, layouts, advertising, and editing, for the *Kansas State Agriculturist* published by students in the College of Agriculture. Pr.: MC 400.

AGCOM 420. Topics in Agricultural Communications. (1–3) I, II, S. Discussions of topics, studies, and activities important to agricultural communications. This course may be repeated.

AGCOM 550. Internship in Agricultural Communications. (1–3) I, II, S. The intern works in a professional capacity in areas such as print journalism, electronic media, advertising, photography, and public relations. Student is supervised by a professional and a faculty member. One hour of credit for each four weeks of supervised work. Internship report and presentation required. Pr.: Junior standing and departmental approval.

AGCOM 770. Professional Journalism Practicum. (1–4) For advanced students. Supervised practical work in the area of professional journalism and mass communications. Includes laboratory investigation, field work, and internships. Pr.: MC 500 and consent of supervising instructor.

Entomology

Sonny Ramaswamy, Head

Professors Baker, Bauernfeind, Beeman,* Broce,* Brooks, Cress,* Elzinga,* Hagstrum, Harvey,* Higgins, Hopkins,* Howard, Lippert, Mock,* Mullen, Nechols, Reese,* Sloderbeck, Smith, Throne, and Wilde;* Associate Professors Arthur, Buschman,* Dover,* Dowdy,* Flinn,* and Kambhampati;* Assistant Professors Charlton,* Whiles, Wright de Malo, and Zhu; Emeriti: Professors Blocker, Gates, Depew, Horber, Mills, and Thompson.

Entomology is the study of insects and related arthropods. Applied entomology stresses their relations to plants and animals, including humans. Courses fall into two groups: broad, general courses suitable for any student; and professional courses that provide training for research, teaching, and administration in colleges, experiment stations, health services, government agencies, industry, foundations, and private practice.

Students majoring in other fields may have a special interest in entomology as part of their curriculum. Courses 300 or 312 and 313 or 314 or 305 are recommended.

Entomology minors

The Department of Entomology offers an undergraduate academic minor in entomology. This minor enables students to diversify their educational experience and provides a group of core courses that complement other academic programs, especially those in related agricultural disciplines such as horticulture, animal science, grain science, and agronomy, or in biology. To pursue a minor in entomology students must: (1) file a declaration of intent to pursue the minor and (2) consult an entomology advisor prior to taking the last three courses used to satisfy the minor requirements. Advisors not only ensure that requirements of the minor are met but also tailor course work to the interests, educational aims, and employment goals of the individual student.

General requirements

At least 15 credit hours as outlined below.

The following courses are required:

ENTOM 710	Insect Taxonomy	3

Select one of the following:

ENTOM 312	General Entomology	2
	and	
ENTOM 313	General Entomology Lab	1
	or	
ENTOM 300	Economic Entomology	3
	or	
ENTOM 320	Horticultural Entomology	3
	or	
ENTOM 305	Livestock Entomology	2
	and	
ENTOM 306	Livestock Entomology Lab	1
		6

At least 9 credit hours from Block A and/or Block B are also required. Courses offered outside the Department of Entomology (Block B) can count toward the minor if they are requirements/electives of specific curricula or if prior approval is obtained from the minor advisor.

Block A: Entomology courses

ENTOM 620	Insecticides: Property. and Law	2
ENTOM 692	Insect Ecology	2
ENTOM 667	Insect Pest Management	3
ENTOM 706	External Insect Morphology	3
ENTOM 799	Problems in Entomology:	1–3
	Insect Behavior	3
	Insect Ecology	3
	Insect Genetics	3
	Insect Physiology	3
	Biological Control	3
	Insect Control by Host Plant Resistance	3
	Insects of Stored Products	3
	Seminar: Special Topics	1

Block B: Courses offered by other departments
The following, *or other minor advisor-approved courses* may count toward the minor.

BIOL 455	General Microbiology	4
BIOL 529	Fundamentals of Ecology	3
BIOL 612	Introductory Limnology	4
BIOL 625	Animal Parasitology	4
BIOL 515	Behavioral Ecology	3
GRSC 651	Food and Feed Plant Sanitation	4
HORT 582	Horticultural Pest Management	3
PLPATH 500	Principles of Plant Pathology	3
PLPATH 607	Plant Disease Diagnosis	2

Entomology minors

A minor in entomology can be obtained in conjunction with any major field of study and students are encouraged to do so. The following degree programs, however, lend themselves particularly well to an entomology minor.

Animal sciences and industry
Entomology minor
In addition to fulfilling the requirements for undergraduate students majoring in animal sciences and industry, students receiving a minor in entomology must take the following courses:

ENTOM 305	Livestock Entomology	2
ENTOM 306	Livestock Entomology Lab	1
ENTOM 300	Economic Entomology	3
	or	
ENTOM 312	General Entomology	2
	and	
ENTOM 313	General Entomology Lab	1
BIOL 625	Animal Parasitology*	4
* Replaces ENTOM 710		10

At least 5 hours of approved electives from the courses listed below:

BIOL 455	General Microbiology	4
ENTOM 620	Insecticides: Properties and Laws	2
ENTOM 692	Insect Ecology	2
ENTOM 710	Insect Taxonomy	3
ENTOM 799*	Problems in Entomology:	1–3

* See under General Requirements for complete course listing.

Crop consulting option in agronomy
Entomology minor
In addition to fulfilling the requirements for undergraduate students in the Crop Consulting Option of Agronomy, students receiving a minor in Entomology must take the following courses:

ENTOM 312	General Entomology	2
ENTOM 313	General Entomology Lab	1
ENTOM 612	Insect Pest Diagnosis	3
ENTOM 710	Insect Taxonomy	3
		9

At least 6 hours of approved electives from the courses listed below:

ENTOM 667	Insect Pest Management	3
ENTOM 692	Insect Ecology	2
ENTOM 706	External Insect Morphology	3
ENTOM 799*	Problems in Entomology:	1–3

* See under General Requirements for complete course listing.

Grain science and industry
Entomology minor
In addition to fulfilling the requirements for undergraduate students majoring in grain science and industry, students receiving a minor in entomology must take the following courses:

ENTOM 312	General Entomology	2
ENTOM 313	General Entomology Lab	1
ENTOM 710	Insect Taxonomy	3
ENTOM 799	Problems in Entomology: Insects of Stored Products	3
GRSC 651	Food and Feed Plant Sanitation	4
		13

At least 2 hours of approved electives from the courses listed below:

ENTOM 667	Insect Pest Management	3
ENTOM 692	Insect Ecology	2
ENTOM 706	External Insect Morphology	3
ENTOM 799*	Problems in Entomology	1–3

* See under General Requirements for complete course listing.

Horticulture degree
Entomology
In addition to fulfilling the requirements for undergraduate students majoring in Horticulture, students receiving a minor in Entomology must take the following courses:

ENTOM 320	Horticultural Entomology	3
	or	
ENTOM 312	General Entomology	2
	and	
ENTOM 313	General Entomology Lab	1
ENTOM 710	Insect Taxonomy	3
PLPATH 500	Principles of Plant Pathology	3
		9

At least 4 hours of approved electives from the courses listed below:

PLPATH 607	Plant Disease Diagnosis	2
ENTOM 667	Insect Pest Management	3
ENTOM 692	Insect Ecology	2
ENTOM 706	External Insect Morphology	3
ENTOM 799*	Problems in Entomology	1–3

* See general requirements for complete course listing.

Entomology courses

◆**ENTOM 250. Insects and People.** (3) II. Intended for undergraduate nonmajors as part of the university general education curriculum. The focus will be on the global impact of insects on human concerns, such as the role of insects as disease vectors, agricultural pests, and pollinators. The students will look at the world from a non-anthropocentric viewpoint, educating them about the overwhelming abundance and diversity of insects and about their differences from ourselves. Two hours lec. and one one-hour interactive session a week.

ENTOM 300. Economic Entomology. (3) II. Classification, life histories, habits, and principles of control of important economic insects. For agriculture majors. Two hours lec. and two hours lab a week.

ENTOM 305. Livestock Entomology. (2) I. Biology and behavior of insects and other pests attacking livestock, poultry, pets, and wildlife. Current recommendations for control are discussed. For students interested in livestock production, feedlot management, dairy and poultry science, and pre-veterinary medicine, as well as other agricultural curricula. Two hours lecture-demonstration a week.

ENTOM 306. Livestock Entomology Laboratory. (1) I. One two-hour lab a week.

ENTOM 312. General Entomology. (2) I, II. A basic study of insects and related arthropods, their structure, physiology, behavior, and relations to plants and animals, including man. Two hours rec. a week.

ENTOM 313. General Entomology Laboratory. (1) I, II. Identification, food preferences, and habitat preferences of the common insects. Two hours a week.

ENTOM 320. Horticultural Entomology. (3) I. Biological principles and management considerations for insect and related arthropods affecting horticulture. Practical application of classification and life history information for accurate recognition, monitoring, and pest management decisions. Control tactics, and conservation of beneficial species. Two hours lec. and two hours lab a week.

Undergraduate and graduate credit

ENTOM 612. Insect Pest Diagnosis. (2) I. Odd years. Diagnosis of plant damage by insects and mites, recognition of harmful insects and mites and beneficial insects. Emphasis on field crop pests but pests of other crops will be considered if there is sufficient interest. One hour lec. and two hours lab a week. Pr.: ENTOM 314 or 710.

ENTOM 620. Insecticides: Properties and Laws. (2) II. Offered even years. Introduction to insecticides as arthropod control agents, including their classification, formulation, properties, mode of action, metabolism, resistance, benefits and environmental impact, and federal and state laws that regulate the development, sale, use, and storage of insecticides. Two hours lec. a week. Pr.: CHM 110 or equivalent.

ENTOM 692. Insect Ecology. (2) I. Even years. Abiotic and biotic factors that affect the abundance and distribution of insects and how to measure them. How these factors affect population processes and community structure, especially in agricultural systems. Emphasis on basic concepts, experiments, and methods. One hour lecture and two hours lab per week. Pr.: BIOL 430 or ENTOM 312.

ENTOM 706. External Insect Morphology. (3) I. Even years. External form, structure, and anatomy; leading theories of form and structure from generalized to specialized conditions. One hour lec. and six hours lab a week. Pr.: ENTOM 300 or 312 and 313.

ENTOM 710. Insect Taxonomy. (3) II. Offered 1997 and alternate years. Laboratory study of insect order and family-group identification. Proper preparation and maintenance of adult insect collections. Lecture stresses the principles of systematics, legal principles of nomenclature, and the phylogeny of insects and their near relatives. For beginning graduate and advanced undergraduate students. One hour lec. and six hours lab a week. Pr.: ENTOM 300 or 312 and 313; ENTOM 706 recommended but not required; insect collection desirable.

ENTOM 767. Insect Pest Management. (3) I. A presentation of the items necessary to consider in order to develop a sound pest management program, from identification of a problem to recommendations made to growers for dealing with a pest. Two hours lec. and one lab a week. Pr.: ENTOM 300 or ENTOM 312.

ENTOM 799. Problems in Entomology. (Var.) I, II, S. For nonthesis or nondissertation studies. Work in various fields of entomology. Pr.: Consent of instructor.

Food Science and Industry

Melvin C. Hunt, Chair of Interdepartmental Program

Advisors: Dikeman, Fung, Harbers, Herald, Hunt, Jeon, Kastner, Kropf, Phebus, Schmidt, Smith, and Unruh, Animal Sciences and Industry; Faubion, Klopfenstein, and Walker, Grain Sciences and Industry.

Food science and industry

Bachelor of science in food science and industry

126 semester hours

This curriculum deals with all aspects of the food industry—both theoretical and practical—from producing raw materials through processing and packaging to marketing finished foods. The curriculum balances fundamental principles and practical applications of food science within a flexible program that permits students to tailor education to personal career goals. The program is certified by the Institute of Food Technologists.

Scholarships are available through the Institute of Food Technologists and the College of Agriculture. Incoming freshman should contact the food science chair in November–December for IFT scholarship forms.

Graduates are needed to manage and supervise sophisticated food manufacturing industries that produce poultry, fresh and processed meat, dairy products, bakery goods, frozen and canned fruits and vegetables, confections, and snack foods.

Imaginative and well-trained people are needed in research and product development to create new and innovative products and processes. Some graduates work with producers to improve the quality of raw materials. Persons trained in HACCP and food safety, microbiology, quality assurance, and sensory analysis are needed to help food processors meet more stringent consumer and government requirements. Others are involved in selling, merchandising, advertising, or managing food operations. Government regulatory agencies also hire food scientists to assure public health, nutrition, and food labeling. If students have foreign language capabilities, international food industry jobs are available.

Very important to the student's course of study is the flexibility of 27 hours of professional electives that the student selects by consultation with their academic advisor. This gives the student an opportunity to design a personalized, well-rounded curriculum. Often students can obtain a minor in such areas as business, cereal chemistry, economics, and agricultural technology management just by careful selection of required minor courses.

The nature of the courses required in this curriculum is very compatible with course requirements of students interested in preveterinary medicine and other pre-professional curriculums such as medicine, dentistry, pharmacy, and nursing. A B.S. in Food Science provides excellent training for these students and offers them other job opportunities if needed.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

General requirements

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
Additional communications course		2–3

Social science and humanities **12**

Quantitative studies

MATH 100	College Algebra	3
MATH 210	Technical Calculus I	3
MATH 211	Technical Calculus II	3
◆STAT 320	Elements of Statistics	3
	or	
◆STAT 340	Biometrics I	3
	or	
◆STAT 350	Business Econ Statistics I	3

Biological sciences

◆BIOL 198	Principles of Biology	4
BIOL 455	General Microbiology	4

Physical sciences

◆CHM 210	Chemistry I	4
◆CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
	and	
CHM 351 Gen	Organic Chemistry Lab	2
BIOCH 521	General Biochemistry	3
	and	
BIOCH 522	General Biochemistry Lab	2
PHYS 115	Descriptive Physics	4

Core food science courses

ASI 305	Fund of Food Processing	3
ASI 501	Food Chemistry	3
	or	
FN 501	Food Science	3
ASI 607	Food Microbiology	4
ASI 727	Chemical Methods of Food Analysis	2
FN 727	Physical Methods of Food Analysis	2
ATM 540	Introduction Food Engineering Technology	3
ATM 541	Food Engineering Technology Lab	1
FN 400	Human Nutrition	3
ASI 694	Food Plant Management	3
	or	
ASI 695	Quality Assurance of Food Productions	3
	or	
FN 705	Food Product Development	3
GENAG 500	Food Science Seminar	1

Professional electives **27**

Unrestricted electives **8-10**

Professional electives—food science

ASI 302	Introduction to Food Science	3
ASI 315	Livestock and Meat Evaluation	3
ASI 430	Food Products Evaluation	3
ASI 490	Micro Computer Applications	3
ASI 603	Food Science Internship	var.
ASI 630	Egg Science	2
ASI 635	Poultry Meat Technology	2
ASI 690	Principles of HACCP	1
ASI 694	Food Plant Management	3
ASI 695	Quality Assuranceof Food Products	3
ASI 713	Rapid Methods and Automation in Microbiology	2
ASI 789	Advanced HACCP Principles in Food Industry	1
ASI 791	Advanced HACCP Principles of Meat/Poultry	1
ASI 792	Advanced Principles Hazard Analysis/Risk Assess	1
ASI 793	Validation of HACCP Plans	1
ASI 794	HACCP and Food Inspection	1
FN 201	Dimensions of Eating	3
FN 301	Food Trends, Legislation, and Regulation	3
FN 413	Science of Food	4
FN 701	Sensory Analysis of Foods	3
FN 705	Food Product Development	3
GENAG 630	Food Science Problems	var.

**GRSC 602	Cereal Science	3
GRSC 651	Food and Feed Plant Sanitation	4
GRSC 661	Quality of Feed and Food Ingredients	3
STAT 341	Biometrics II	3

Professional electives—food processing
****Minor in cereal chemistry**
Must take 4 courses with** plus 3-4 hrs of selected courses

ASI 350	Meat Science	3
ASI 361	Meat Processing	2
ASI 370	Principles of Meat Evaluation	2
ASI 395	Classification, Grading, and Selection of Meat	2
ASI 405	Fundamentals of Milk Processing	3
ASI 608	Dairy Food Processes and Technology	3
ASI 605	Fresh Meats Operations	3
ASI 610	Processed Meats Operations	2
ASI 671	Meat Selection and Utilization	2
ASI 777	Meat Technology	4
ATM 520	Food Manufacturing Lab	2
**GRSC 100	Principles of Milling	3
**GRSC 505	Cereal and Feed Analysis	3
**GRSC 625	Flour and Dough Testing	3
GRSC 635	Baking Science I	2
GRSC 636	Baking Science I Lab	2
GRSC 737	Baking Science II	2
GRSC 738	Baking Science II Lab	1

Professional electives—nutrition

FN 500	Public Health Nutrition	3
FN 550	Nutrient Metabolism	3
FN 610	Lifespan Nutrition	3
FN 630	Clinical Nutrition	4
FN 635	Nutrition and Exercise	3

Professional electives—technology
***Minor in agriculture technology management**

*ATM 160	Introduction to Agricultural Systems and Technology	3
*ATM 360	Energy and Power in Biological Systems	3
*Additional ATM minor hours		9
ATM 520	Food Manufacturing Lab	2
ATM 571	Functions of Computer Machines	3
ATM 651	Grain and Forage Handling Systems	3
ATM 661	Water and Waste in Environment	3
GRSC 610	Electricity and Control for Milling Processes	3
IMSE 373	Computer Applications in Industrial Engineering	2
ME 212	Engineering Graphics I	2
ME 560	Engineering Economics	3

Professional electives—business
Minor in agribusiness—See requirements in Agricultural Economics section
*****Minor in business**

***◆ACCTG 231	Accounting Business Operation	3
***◆ACCTG 241	Accounting Investment and Finance	3
***MANGT 420	Management Concepts	3
***◆MKTG 400	Marketing	3
***FINAN 450	Introduction to Finance	3
AGCOM 400	Agricultural Business Communications	3
◆AGEC 120	Agricultural Economics and Agribusiness	3
AGEC 318	Agribusiness Management	3
AGEC 410	Agricultural Policy	3
◆AGEC 420	Commodity Futures Markets	2
AGEC 421	Livestock and Meat Marketing	2
AGEC 422	Grain Marketing	2
AGEC 505	Agricultural Market Structures	3
AGEC 515	Agribusiness Marketing	3
CIS 101	Introduction to Information Technology	1
CIS 102	Introduction to PC Spreadsheet Applications	1
CIS 103	Introduction to PC Database Applications	1
CIS 104	Introduction to PC Word Processing	1
◆ECON 120	Principles of Microeconomics	3
◆MANGT 300	Introduction to Total Quality Management	3
MANGT 421	Introduction to Operations Management	3
MANGT 390	Business Law I	3
MANGT 530	Industrial and Labor Relations	3
MANGT 531	Personnel and Human Resource Management	3
MKTG 450	Consumer Behavior	3
MKTG 541	Retailing	3
MKTG 542	Sales Management	3
MKTG 545	Marketing Channels	3

◆Denotes courses meeting university general education requirements.

Other professional electives can be substituted as appropriate.

Minor in food science and industry

A minor in food science and industry can be earned by completing a minimum of 15 hours of credit. Required courses include:

ASI 501	Food Chemistry
ASI 607	Food Microbiology
ASI 695	Quality Assurance of Food Products
	or
ASI 727	Chemical Methods of Food Analysis
	and
FN 727	Physical Methods of Food Analysis

Either 4 or 5 additional hours of course work at the 300 level or higher will be selected from the approved list of professional electives. Students must complete a petition for admission into the minors program and work with a food science and industry advisor to tailor courses to meet their individual needs.

General Agriculture

Lawrence H. Erpelding, Associate Dean
Jackie McClaskey, Assistant Dean

General agriculture courses

GENAG 101. Ag Orientation. (1) I. Objectives, organization, and procedures of the College of Agriculture and the university are studied. Historical developments and projected trends in agriculture and the application of basic sciences to agriculture are presented. Required of freshmen in agriculture.

GENAG 200. Topics in Agriculture. (0–3) On sufficient demand. Selected issues in agriculture. May be repeated with change in topics.

GENAG 390. Agricultural Employment. (1) I, II. Assists the agriculture student in developing a career blueprint; understanding job markets and techniques to obtain employment including recruitment/placement services, resume construction, personal interviewing, and job offer evaluation and analysis; and monitoring involved in career planning.

Undergraduate and graduate credit

GENAG 500. Food Science Seminar. (1) I. Review of recent developments in the food science industry and in food science research. Food science literature and intradepartmental research will provide source material. Required of all food science undergraduates in agriculture.

GENAG 505. Comparative Agriculture. (1–4) Intersession. A travel-study program which is intended to acquaint students with agriculture of other countries and other parts of the U.S. and how it differs from Midwest-Great Plains agriculture relative to climate, crops, soils, livestock practices, marketing, and cultural attitudes toward agriculture. Pr.: Consent of instructor.

GENAG 515. Honors Presentation. (1) I, II, S. Presentation of completed teaching or extension activity, research project, or demonstration project. Pr.: Successfully completed honors proposal and permission of honors advisor.

◆GENAG 582. Natural Resources/Environmental Sciences Project (NRES). (3) I, II. A comprehensive project in NRES. Requires integration of information and understanding acquired in NRES secondary major courses. Students must prepare and present written and oral reports. Three hours rec. a week. Pr.: All writing and oral communications courses required for major. Pr. or conc.: 15 hours of approved courses in NRES secondary major. Cross-listed with DAS 582 and DEN 582.

GENAG 630. Food Science Problems. (1–3) I, II, S. Research or related work with others, or a literature search. Written reports are required. Any field of food science for which the student has adequate background. Pr.: ASI 302 and junior standing.

GENAG 780. Current Topics in Agriculture. (1–3) On sufficient demand. Selected topics studied to provide an in-depth understanding of current agricultural issues. May be repeated with change in topics. Pr.: Completion of baccalaureate degree.

Grain Science and Industry

Brendan Donnelly, Head

Professors Behnke*, Donnelly, Eustace,* Klopfenstein,* MacRitchie, Seib,* Walker,* and Wetzel;* Adjunct Professors Chung,* Koeltzow, Lookhart,* and Smail; Associate Professors Haque,* Fairchild, and Flores;* Adjunct Associate Professors Seitz;* Assistant Professors Acasio (temporary), Brent,* Herrman,* Okot-Kotber, Sun,* Tilley;* Adjunct Assistant Professors Rogers* and I.Y. Zayas; Instructor Gwirtz and Willyard; Senior Scientist McCluskey; IGP Program Administrator Howard; Emeriti: Professors Balding, Deyoe, Farrell, Hahn, Hoseney, Johnson (phased retirement), McEllhiney, Ponte, Schoeff, Ward, and Wilcox; Associate Professor Wingfield; Instructor Pudden.

The Department of Grain Science and Industry offers three curricula: a bachelor of science in bakery science and management; a bachelor of science in feed science and management; and a bachelor of science in milling science and management. In the baking science and milling science curricula, an option may be selected in administration, chemistry, or operations. The feed science curriculum has specialization electives emphasizing administration or engineering. This department also participates in the food science and industry curriculum.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

Bakery science and management

Bachelor of science in bakery science and management
128 semester hours

Cereal chemistry option

Foundation course requirements		**34**
◆ACCTG 231	Accounting for Business Operations	3
◆BIOL 198	Principles of Biology	4
◆CHEM 210	Chemistry I	4
	and	
◆CHEM 230	Chemistry II	4
	or	
CHEM 220	Chemical Principles I	5
	and	
CHEM 250	Chemical Principles II	5

◆ECON 110	Principles of Macroeconomics	3
	or	
◆AGEC 120	Agricultural Economics and Agribusiness	
◆ECON 120	Principles of Microeconomics	3
ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
ENGL 516	Written Communication for the Sciences	3
	or	
AGCOM 400	Agricultural Business Communication	3
GENAG 101	Agricultural Orientation	1
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
Basic and applied sciences		**52**
ASI 305	Fundamentals of Food Processing	3
	or	
ASI 501	Food Chemistry	
ASI 318	Fundamentals of Nutrition	3
	or	
◆FN 132	Basic Nutrition	
	or	
FN 400	Human Nutrition	3
ASI 607	Food Microbiology	4
ATM 540	Introduction to Food Engineering Technology	3
◆BIOCH 265	Introductory Organic and Biochemistry	5
	or	
BIOCH 521	General Biochemistry	3
CHM 371	Chemical Analysis	4
CHM 500	General Physical Chemistry	3
	or	
CHM 585	Descriptive Physical Chemistry	3
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Lab	2
CHM 531	Organic Chemistry I	3
	or	
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Lab	2
CHM 550	Organic Chemistry II	3
MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5
◆STAT 320	Elements of Statistics	3
	or	
◆STAT 340	Biometrics I	3
Departmental courses		**30**
GRSC 015*	Seminar in Grain Science	0
GRSC 100	Principles of Milling	3
GRSC 505	Cereal and Feed Analysis	3
GRSC 591	Commercial Feed and Food Manufacturing Internship	2
GRSC 602	Cereal Science	3
GRSC 625	Flour and Dough Testing	3
GRSC 630	Management Applications in the Grain Processing Industries	3
GRSC 635	Baking Science I	3
GRSC 636	Baking Science Lab	1
GRSC 651	Food and Feed Product Protection	4
GRSC 670	Bakery Layout and Design	1
GRSC 701	Practicum in Baking Techniques	2
GRSC 737	Baking Science II	2
GRSC 738	Baking Science Lab	1
Electives		12
Free and university general education electives		**~12+**

***GRSC 015 is a required course to be taken each semester.

+Recommended electives to strengthen a program include statistical process control, HACCP, communications, food processing, business, sensory analysis and food science courses, and GRSC 505, 610, and 720.

Note: Assumes incoming students have requisite chemistry, pre-calculus math, and computer skills. Chemistry courses can be selected to meet requirements for the minor in chemistry.

Production management option

128 semester hours

Foundation course requirements		**37**
◆ACCTG 231	Accounting for Business Operations	3
◆BIOL 198	Principles of Biology	4
◆CHEM 210	Chemistry I	4
◆CHEM 230	Chemistry II	4
◆ECON 110	Principles of Macroeconomics	3
	or	
◆AGEC 120	Agricultural Economics and Business	
◆ECON 120	Principles of Microeconomics	3
ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
ENGL 516	Written Communication for Sciences	3
	or	
AGCOM 400	Agricultural Business Communications	
GENAG 101	Agricultural Orientation	1
MANGT 420	Management Concepts	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
Basic and applied sciences		**38**
ASI 305	Food Processes	3
	or	
ASI 501	Food Chemistry	
ASI 318	Fundamentals of Nutrition	3
	or	
◆FN 132	Basic Nutrition	3
	or	
FN 400	Human Nutrition	3
ASI 607	Food Microbiology	4
ATM 540	Introduction to Food Engineering Technology	3
◆BIOCH 265	Introduction to Organic and Biological Chemistry	5
	or	
CHEM 350	General Organic Chemistry	3
	and	
BIOCH 521	General Biochemistry	3
BIOL 455	General Microbiology	4
MATH 210	Technical Calculus I	3
	or	
MATH 220	Analytic Geometry and Calculus I	
ME 212	Engineering Graphics	2
	or	
ENVD 205	Graphics I (Secure permit in S 212D)	
PHYS 113	General Physics I	4
	and	
PHYS 114	General Physics II	4
	or	
PHYS 213	Engineering Physics I	5
	and	
PHYS 214	Engineering Physics II	5
◆STAT 320	Elememtary Statistics	3
	or	
◆STAT 340	Biometrics I	3
Departmental courses		**27**
GRSC 015*	Seminar in Grain Science	0
GRSC 100	Principles of Milling	3
GRSC 591	Internship	2
GRSC 602	Cereal Science	3
GRSC 625	Flour and Dough Testing	3
GRSC 630	Management Applications	3
GRSC 635	Baking Science I	3
GRSC 636	Baking Science Lab	1
GRSC 651	Food and Feed Product Protection	4
GRSC 670	Bakery Layout and Design	1
GRSC 701	Practicum Baking Techiques	1
GRSC 737	Baking Science II	2
GRSC 738	Baking Science Lab	1
Electives		**26**
Free and university general education electives		**~11+**
Business electives: Choose a minimum of 15		
◆ACCTG 241	Accounting Investment and Finance	3
ACCTG 331	Accounting Processes and Controls	3
ECON 530	Money and Banking	3
FINAN 450	Introduction to Finance	3
FINAN 470	Financial Analysis and Valuation	3
IMSE 501	Industrial Management	3
MANGT 300	Introduction to Total Quality Management	3
	or	
DEN 300	Introduction to Total Quality Management	3
MANGT 530	Industrial Relations	3
MANGT 531	Personnel Human Resource Management	3*
	or	
◆ECON 523	Human Resource Economics	
MANGT 630	Labor Relations Law	3
◆MKTG 400	Marketing	3
MKTG 542	Sales Management	3

*GRSC 015 is a required course to be taken each semester.

+Recommended electives to strengthen a program include statistical process control, HACCP, communications, food processing, business, sensory analysis and food science courses, and GRSC 505, 610, and 720.

Note: Assumes incoming students have requisite chemistry, pre-calculus math, and computer skills.

Feed science and management

Bachelor of science in feed science and management

126 semester hours

Freshman

Fall semester

GENAG 101	Ag Orientation	1
GRSC 100	Principles of Milling	3
◆CHM 210	Chemistry I	4
ENGL 100	Expository Writing I	3
GRSC 015	GRSC Seminar	0
MATH 100	College Algebra	3
		14

Spring semester

◆CHM 230	Chemistry II	4
MATH 150	Plane Trigonometry	3
SPCH 105	Public Speaking IA	2
Social science elective		3
◆BIOL 198	Principles of Biology	4
GRSC 015	GRSC Seminar	0
		16

Sophomore

Fall semester

ENVD 205	Graphics I	2
◆ECON 110	Principles of Macroeconomics	3
ENGL 200	Expository Writing II	3
Required courses*		8
GRSC 015	GRSC Seminar	0
		16

Spring semester

GRSC 110	Flow Sheets	2
ENTOM 312	General Entomology	2
ENTOM 313	General Entomology Lab	1
Social science electives		6
Required courses*		5
GRSC 015	GRSC Seminar	0
		16

Junior

Fall semester

GRSC 661	Qualities of Feed and Food Ingredients	3
Required courses*		13
GRSC 015	GRSC Seminar	0
		16

Spring semester

GRSC 651	Food and Feed Product Protection	4
GRSC 510	Feed Technology I	4
Required courses*		5
GRSC 015	GRSC Seminar	0
GRSC 505	Cereal and Feed Analysis	3
		16

Senior

Fall semester

GRSC 655	Cereal and Food Plant Design and Construction	3
Required courses*		9
GRSC 015	GRSC Seminar	0
GRSC 750	Feed Technology II	4
		16

Spring semester

GRSC 610	Electricity and Control for Milling Processes	3
GRSC 630	Management Applications	3
Required courses*		10
GRSC 015	GRSC Seminar	0
		16

*Including specialization electives

Required courses

◆AGEC 420	Commodity Futures Marketing	2
AGEC 422	Grain Marketing	2
◆BIOCH 265	Introduction to Organic Biochemistry	5
MATH 205	General Calculus and Linear Algebra	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
◆STAT 320	Elements of Statistics	3
CIS 110	Introduction to Personal Computing	3
◆ACCTG 231	Accounting for Business Operations	3
ENGL 516	Written Communication for the Sciences	3
ASI 318	Fundamentals of Nutrition	3

Specialization electives (15 hours)**

GENAG 390	Agricultural Employment	1
GRSC 591	Commercial Feed and Food Manufacturing Internship	2
GRSC 720	Extrusion Processing for Food and Feed Industries	4
GRSC 790	Grain Science Problems	2–3
AGEC 410	Agricultural Policy	3
AGEC 515	Agribusiness Marketing	3
AGEC 631	Principles of Transportation	3
AGEC 632	Agribusiness Logistics	3
ASI 320	Principles of Feeding	3
◆ACCTG 241	Accounting for Investment and Finance	3
ACCTG 331	Accounting for Prog. and Controls	3
FINAN 450	Essentials of Finance	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MANGT 530	Industrial and Labor Relations	3
MANGT 531	Personnel and Human Resource Management	3
MANGT 630	Labor Relations Law	3
IMSE 601	Introduction to Industrial Management	3

** or approved courses at 350-level or above

Unrestricted electives (maximum)	6
Social science electives	9 (UGE requirement)

Milling science and management

Bachelor of science in milling science and management

129 semester hours

Freshman

Fall semester

GENAG 101	Ag Orientation	1
GRSC 100	Principles of Milling	3
◆CHM 210	Chemistry I	4
ENGL 100	Expository Writing	3
◆ECON 110	Principles of Macroeconomics	3
GRSC 015	GRSC Seminar	0
		14

Spring semester

◆CHM 230	Chemistry II	4
SPCH 105	Public Speaking IA	2
Social science elective		3
Option A, B, or C electives		3
GRSC 015	GRSC Seminar	0
GRSC 110	Flow Sheets	2
		14

Sophomore

Fall semester

◆BIOL 198	Principles of Biology	4
CIS 110	Introduction to Personal Computing or equivalent	3
ENGL 200	Expository Writing II	3
Option A, B, or C electives		5
Social science elective		3
GRSC 015	GRSC Seminar	0
		18

Spring semester

GRSC 500	Milling Science I	4
BIOL 455	General Microbiology	4
GRSC 505	Cereal and Feed Analysis	3
Social science electives		3
Option A, B, or C electives		3
GRSC 015	GRSC Seminar	0
		17

Junior

Fall semester

AGRON 340	Grain Grading	2
Option A, B, or C electives		12
◆STAT 320	Elementary Statistics	3
GRSC 015	GRSC Seminar	0
		17

Spring semester

GRSC 602	Cereal Science	3
GRSC 651	Food and Feed Production Protection	4
Option A, B, or C electives		9
GRSC 015	GRSC Seminar	0
		16

Senior

Fall semester

GRSC 635	Baking Science I	2
GRSC 636	Baking Science I Lab	2
Option A, B, or C electives		12
GRSC 015	GRSC Seminar	0
		16

Spring semester

Option A, B, or C electives		13
GRSC 015	GRSC Seminar	0
GRSC 734	Mill Processing Technology Management	3
		16

Options

Management option (A)

◆ACCTG 231	Accounting for Business Operations	3
◆ACCTG 241	Accounting for Investment and Financing	3
AGEC 318	Agribusiness Management	3
◆AGEC 420	Commodity Futures	2
AGEC 422	Grain Marketing	2
◆BIOCH 265	Introduction to Organic and Biochemistry	5
GRSC 625	Flour and Dough Testing	3
GRSC 630	Management Applications in the Grain Processing Industries	3
GRSC 730	Milling Science II	2
MATH 205	General Calculus and Linear Algebra	3
PHYS 115	Descriptive Physics	4
◆SPCH 311	Business and Professional Speaking	3
Free electives		10
◆AGEC 120	Agricultural Economics and Agribusiness	3

Select 9 hours from the following:

ACCTG 331	Accounting Processes and Controls	4
AGEC 513	Agricultural Finance	3
AGEC 515	Agribusiness Marketing	3
AGEC 632	Agricultural Business Logic	3
AGEC 710	Advanced Agribusiness Management	3
ENGL 516	Written Communication for the Sciences	3
GENAG 390	Agricultural Employment	1
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MANGT 530	Industrial and Labor Relations	3
MANGT 531	Personnel and Human Resources Management	3
MANGT 630	Labor Relations Law	3

Chemistry option (B)

GRSC 625	Flour and Dough Testing	3
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Lab	2
CHM 371	Chemical Analysis	4
CHM 500	General Physical Chemistry	3
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry I Lab	2
CHM 550	Organic Chemistry II	3
CHM 551	Organic Chemistry II Lab	2
GRSC 712	Vibrational Spect. Analysis	1–2
MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5
Electives		13–14

Operations option (C)

GRSC 610	Electricity and Control for Milling Processes	3
GRSC 630	Management Applications for the Grain Processing Industries	3
GRSC 640	Advanced Flow Sheets	2
GRSC 655	Cereal Food Plant Design and Construction	3
GRSC 730	Milling Science II	2
GRSC 731	Milling Science II Lab	2
GRSC 785	Advanced Flour and Feed Technology	3
◆BIOCH 265	Introduction to Organic and Biochemistry	5
MATH 220	Analytical Geometry and Calculus I	4
MATH 221	Analytical Geometry and Calculus II	4
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5
CE 231	Statics A	3
ATM 540	Introduction to Food Engineering Techniques	3
ENVD 205	Graphics I	2
Free electives		9

◆Denotes university general education courses.

Grain science and industry minors

A grain science minor implies a knowledge of certain aspects of grain processing and utilization. We have structured our minors to include a minimum basic understanding of a specialization.

Bakery science minor

GRSC 100	Principles of Milling	3
GRSC 602	Cereal Science	3
GRSC 625	Flour and Dough Testing	3
GRSC 635	Baking Science I	2
GRSC 636	Baking Science I Lab	2
GRSC 737	Baking Science II	2
GRSC 738	Baking Science II Lab	1
		16

Grain science majors cannot use courses required in their major as part of a bakery science minor.

Feed science minor

GRSC 100	Principles of Milling	3
GRSC 110	Flow Sheets	2
GRSC 510	Feed Tech I	4
GRSC 650	Concepts of Modern Feed Mill Design	3
GRSC 750	Feed Tech II	4
		16

Grain science majors cannot use courses required in their major as part of a feed science minor.

Cereal chemistry minor

GRSC 100	Principles of Milling	3
GRSC 505	Cereal and Feed Analysis	3
GRSC 602	Cereal Science	3
GRSC 625	Flour and Dough Testing	3

Plus 3 to 4 hours from the following:

GRSC 635/ 636	Baking Science I and Lab (lecture and lab)	4
GRSC 711	Vibrational Spectroscopy Analysis	1–2
GRSC 712	Contemporary Chromatograph Analysis of Food	1
GRSC 720	Extrusion Processing	4
GRSC 790	Special Topics	var.
		15–16

Grain science majors cannot use courses required in their major as part of a cereal chemistry minor.

International Grains Program

Bredan Donnelly, Director
John Howard, Program Administrator

The International Grains Program promotes the marketing of wheat, corn, soybeans, sorghum, and other U.S. grains. As part of the effort to expand existing markets and to develop new ones for those agricultural commodities, program participants are trained in the processing and handling of U.S. food and feed grains, instructed in the use of the end products, and given a thorough understanding of the workings of the U.S. grain marketing system.

Grain science and industry courses

GRSC 015. Grain Science Seminar. (0) I, II. Presentation of industrial problems and practicies by faculty and professionals associated with the flour, feed, and baking industries. Three one-hour lec. per semester.

GRSC 100. Principles of Milling. (3) I, II. Introduction to grain and feed milling processes. Two hours lec. and three hours lab a week. Pr.: High school algebra.

GRSC 110. Flow Sheets. (2) I, II. The construction and assembling of a flow sheet. A considerable amount of time is spent in the feed mill and flour mill sketching the assignment. The assignment is then drawn in the classroom. Six hours lab a week. Pr.: GRSC 100, ME 212.

GRSC 500. Milling Science I. (4) II. Principles and practices of wheat flour milling with full-scale equipment including grain storage, blending, cleaning, conditioning plant, and a modern pneumatic 240 hundred weight flour mill, with instrumentation and air conditioning, etc. Two hours lec. and six hours lab a week. Pr.: GRSC 100, 110, and a course in physics.

GRSC 505. Cereal and Feed Analysis. (3) II. Principles, methods, and instruments for analyzing and testing cereal grains, cereal, and feed products. One hour lec. and six hours lab a week. Pr.: CHEM 230 and BIOCH 120.

GRSC 510. Feed Tech I. (4) II. Introduction to formula feed manufacturing, including principles of conveying, grinding, mixing, pelleting, and other processing techniques, and the formulation of concentrates, premixes, and rations using a digital computer. Pr.: ASI 318 and GRSC 110. Three hours lec. and three hours lab a week.

GRSC 591. Commercial Feed and Food Manufacturing Internship. (2) I. A practical application of feed and food manufacturing technology during an eight-week summer internship with an active commercial feed and food manufacturing company. The course will stress applied aspects of commercial feed and food manufacturing, which can include, but not be limited to, plant operations, maintenance, personnel and labor relations, business management, warehousing, ingredient procurement, quality assurance, and fleet management. Pr.: GRSC 510 or 500 or 635.

GRSC 602. Cereal Science. (3) I, II. The characteristics of cereals, legumes, their components, and their processing to foods. Three hours lec. a week. Pr.: BIOCH 265.

GRSC 610. Electricity and Its Control for the Grain Processing Industries. (3) II. Major emphasis will be given to application of electricity to machinery for grain processing and electrical control. Two hours lec. and two hours of laboratory a week. Pr.: GRSC 500 or 635 or consent of instructor.

GRSC 625. Flour and Dough Testing. (3) I, II. Physical and chemical methods used in evaluating wheat flour and doughs. Two one-hour lec. and one three-hour lab a week. Pr.: GRSC 602.

GRSC 630. Management Applications in the Grain Processing Industries. (3) II. This course deals with management principles and their specific application to the grain processing industries. Industry and allied trade personnel in management positions will give a number of lectures in their field of expertise. Special emphasis is placed on grain industry organizations, plant management, labor contracts, supervision, scheduling and planning, regulatory agencies, and cost control. Three hours lec. a week. Pr.: ECON 110 and either GRSC 510, 500, or consent of instructor. Junior standing.

GRSC 635. Baking Science I. (2), I. Introduction to chemical and physical properties of flour and other principal ingredients used in production of yeast-leavened and chemical-leavened bakery foods. Study of major processing methods for making yeasted doughs such as breads, rolls, sweet goods, frozen dough, and partially baked products. Overview of major processes used for chemically-leavened baked products. Study of the relationship of ingredient composition to product type and processing required. Two hours lecture a week. Pr.: BIOCH 120.

GRSC 636. Baking Science I Laboratory. (2) I, II. Laboratory exercises in theory and production of yeast-leavened baked products. Six hours lab a week. Pr.: GRSC 635 or conc. enrollment.

GRSC 640. Advanced Flow Sheets. (2) II. Design of flow diagrams for dry milling processes. Uses a combination of methods that lead to practical applications and analytical techniques. Six hours lab a week. Pr.: GRSC 500 or 510.

GRSC 651. Food and Feed Production Protection. (4) II. Sanitation in relation to processing, handling, and storage of human and animal foods. Emphasis on contaminants, control of causative agents, equipment and plant design, applicable laws and regulations. Three hours lec. and three hours lab a week. Pr.: Minimum of 8 hours of biological science; junior standing.

GRSC 655. Cereal Food Plant Design and Construction. (3) I. This course deals with principles of modern grain processing plant design, feasibility, and equipment selection for plant improvements and new plant construction. Emphasis is placed on the effects of design on plant operating efficiency, finished product quality, and constuction costs. Pr.: GRSC 500 or GRSC 510; junior standing.

GRSC 661. Qualities of Feed and Food Ingredients. (3) I. The course provides an integrated biological, chemical, and physical basis for evaluating the inherent nutritional quality of food and feed ingredients and the scientific literature techniques for obtaining new information. Three hours of lecture a week. Pr.: BIOCH 120.

GRSC 670. Bakery Layout. (2) I. The layout of facilities to produce baked goods are studied. Students prepare their own bakery layout. Current problems in a bakery production setting in the baking industry are discussed. Two hour lab. Pr.: MATH 100, PHYS 113, and GRSC 636.

GRSC 701. Practicum in Bakery Technology. (1). Intersession only. One-week intensive course during the January intersession. Lectures and hands-on laboratory experience with commercial production scale baking equipment for breads and rolls, cookies and crackers, and cakes and sweet doughs. Restricted to upperclass bakery science and management majors or permission of the instructor. Pr.: GRSC 635, 636.

GRSC 710. Fundamentals of Grain Storage. (2) I. This course focuses on the theory and practice of management of stored grain to maintain grain quality and maximize profits. Subjects include grain quality factors, physical properties of grain, grain masses, and grain storage structures, causes and management of deterioration in grain quality, and regulatory issues related to grain handling and storage. Pr.: GRSC 602 or 661.

GRSC 712. Vibrational Spectroscopic Analysis and Chemometrics. (1–2) II. Infrared and particularly modern near-infrared spectroscopic "as is" analysis of foods, natural products, and synthetic substances is accomplished with direct sampling and the use of multivariate statistics. This course is intended to enable the student to understand the principles and successfully apply this technology to practical analytical problems with emphasis upon food. Method development will be taught using specific analytes in selected products. Theoretical background, working of modern instrumentation and associated software is presented in support of achieving practical competence. Pr.: BIOCHEM 265, CHEM 271 or consent of instructor.

GRSC 713. Contemporary Chromatographic Analysis of Food. (1) II. High performance liquid chromatography (HPLC) is the primary focus of this course. This will be supported by including treatment of topics in contemporary gas chromatography and supercritical fluid chromatography and extraction. Optimizing chromatographic conditions through knowledge of the column chemistry will be covered in addition to detector options, instrumentation, and sample preparation. Pr.: BIOCH 265, or CHEM 271 or consent of instructor.

GRSC 720. Extrusion Processing in the Food and Feed Industries. (4) I. The course is designed to provide the student with an understanding of extrusion technology and the ability to apply it to product development and production through a "hands-on" approach. Major emphasis is on laboratory exercises in which students will operate pilot scale extrusion equipment to produce readily-recognizable commercial products such as cheese curls, breakfast cereals, pasta, pet food, etc. Emphasis will also be placed on process and product development, analysis, and problem-solving techniques. Three hours of lec. plus one three-hour lab a week. Pr.: STAT 320 and GRSC 602.

GRSC 725. Feed Manufacturing Processes. (3) I. Study of the technical phases of formula feed manufacturing, equipment design and function, effect of processing and ingredients on nutritional acceptability of feeds and quality control. Two hours lec. and three hours lab a week. Pr.: MATH 100, MATH 150, and ASI 318.

GRSC 730. Milling Science II. (2) I. Advanced studies of the entire gradual reduction system of wheat flour milling and the many unit process systems that constitute the milling system. The theory and practice of mill control are studied in detail. Processing of other cereal grains and oil seeds are covered as well as general mill management. Two hours lec. a week. Pr.: GRSC 500.

GRSC 731. Milling Science II Laboratory. (2) I. The processes for milling other grains such as corn, oats, sorghum, different classes of wheat, and rye are studied in theory and by practice on small-scale laboratory milling units. Six hours lab a week. Pr. GRSC 730 or conc. enrollment.

GRSC 734. Milling Processing Technology Management. (3) II. A capstone course for milling science and management students. The objective is to familiarize students with the managerial and processing operations involved in the management of a flour mill, modeling simulation techniques for flour milling operations, engineering economic parameters used in management operations, investment projects and evaluation of new milling technologies. Two hours lec. and three hours of lab per week. Pr.: GRSC 730.

GRSC 737. Baking Science II. (2) II. Study of physical, chemical, and functional properties of ingredients used in production of bakery products including cakes, cookies, doughnuts, pies, bagels, and related products. Principles of chemical leavening. Description of processes utilized to make the various bakery foods. Chemistry and functionality of flavors, spices, gums, speciality starches, and colors used in baking. Types of fillings and icings for bakery products. Formulation of low-fat and low-calorie baked products. Quality factors, total quality programs, and nutritional value of end products. Two hours lec. a week. Pr.: GRSC 635.

GRSC 738. Baking Science II Laboratory. (1) II. A laboratory course to accompany Baking Science II (GRSC 737). Exercises and experiments in production of chemically-leavened and yeast leavened bakery foods including various cakes, cookies, doughnuts, bagels, icings, and fillings. Three hours of lab a week. Pr.: GRSC 737 or conc. enrollment.

GRSC 750. Feed Technology II. (4) I. Advanced study of engineering principles applicable to flour and feed plant operations, materials handling, equipment selection, and processing systems. Three hours lec. per week and three hours laboratory per week. Separate lab sessions are conducted for flour and for feed students. Pr.: GRSC 510 or GRSC 500, PHYS 114 or 214, and a course in statistics and computer use.

GRSC 785. Advanced Flour and Feed Technology. (3) II. Design and use of exhaust systems, pneumatic conveying systems, bins and hoppers, and the practical applications of electrical interlocking, instrumentation, and microprocessors to automatic mill control. Also other subjects such as sound measurement and explosion detection and prevention are covered. Two hour lec. and three hours lab a week. Pr.: GRSC 730 or 750.

GRSC 790. Grain Science Problem. (Var.) I, II, S. Pr.: Consent of staff.

Horticulture, Forestry, and Recreation Resources

Thomas D. Warner, Head
Raymond Aslin, State Forester
Charles Marr, Horticulture Extension Program Leader
Keith Lynch, Undergraduate Program Coordinator

Professors Cable,* Geyer,* Jennings,* Marr,* Mattson,* Rajashekar,* van der Hoeven and Warner; Associate Professors Barden, Erb,* Fry,* Gast,* Khatamian,* Kimmins, Lynch, Morgan, Reid, Stevenson, and Wiest*; Assistant Professors Huang, Keeley, LeDuc, Stevens, and Williams; Instructor Brooks; Emeriti Professors Clayberg, Leuthold, and Kern.

The Department of Horticulture, Forestry, and Recreation Resources is a multi-disciplinary department offering undergraduate programs in horticulture, horticulture science, horticultural therapy, park resource management, and recreation and park administration. Departmental faculty participate in research, extension, and academic programs in these diverse fields which have a positive impact on the quality of life and enhancing the environment. Individual students may have opportunities working with faculty on research or extension programs.

Horticulture programs

K-State offers four-year curricula in horticulture and horticultural therapy. The Department of Horticulture, Forestry, and Recreation Resources also participates in an interdepartmental program in food science and industry.

Horticulture is the science and art of growing plants for environmental improvement, aesthetic value, intensive food production, or social-therapeutic effects. Students, in consultation with faculty advisors, may select courses of study in horticulture or horticulture science. The horticulture program is designed for those seeking to move into the production or service sectors of horticulture or pursue careers in public horticulture. Students completing this program also meet requirements for entrance into graduate programs across the United States and can meet the education requirements for certification by the American Registry of Certified Professionals in Agronomy, Crops, and Soils. The horticulture science program provides a stronger foundation in basic sciences for graduate studies. Students interested in pursuing careers in industry research or extension can also follow this program.

All students are required to take a core of general courses in addition to the agricultural, horticultural, and business courses. Students in the horticulture program will specialize and take additional courses to gain expertise in the areas of fruit and vegetable production, golf course management, greenhouse management, landscape design and management, nursery management, or turf management. The specialization in golf course management is sufficiently different from the others in horticulture that complete requirements are listed separately. After the sophomore year, students are required to complete a three- or six-month internship at an approved site.

Career opportunities for students graduating with a degree in horticulture exist in various arenas, including production, landscape design and management, interiorscape design and management, floral design, botanic gardens and arboreta, garden center operation, athletic grounds management, and golf course operations. Opportunities exist with the various support industries in the area of sales of fertilizers, chemicals, plant material, seeds, containers, and various other supplies; product development; breeding and seed production companies; and trade magazines. Horticulture majors obtaining a minor in plant pathology or entomology will also find opportunities in horticultural pest diagnosis and consulting. Students considering a career in extension should consider pursuing a master of science degree.

Horticulture

Bachelor of science in agriculture
130 semester hours (except golf course management: 123 semester hours)

Advisors: Brooks, Fry, Huang, Jennings, Khatamian, LeDuc, Rajashekar, and Williams.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

Communications requirements

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking 1A	2
Communications elective		3
		11

General electives

Humanities		9
Social sciences		9
		18

Math/chemical sciences requirements

MATH 100	College Algebra*	3
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
Organic Chemistry[1]		3–5
Math/stat/comp. science**		3
		17–19

*Students in horticulture science take MATH 210 Technical Calculus, 3, not MATH 100 College Algebra.
**Students in horticulture science take STAT 340 Biometrics I, 3, not a math/stat/comp. science elective.

Agricultural/biological sciences requirements

GENAG 101	Agricultural Orientation	1
BIOL 210	General Botany	4
HORT 201	Introductory Horticultural Science	4
AGRON 305	Soils	4
BIOL 500	Plant Physiology[2]	4
PLPTH 500	Principles of Plant Pathology	3
ASI 500	Genetics	3
Entomology elective		3
		26

Horticulture requirements

HORT 350	Plant Propagation	3
HORT 582	Horticultural Pest Management[3]	3
HORT 590	Horticulture Internship	3
HORT 520	Fruit Production	3
	or	
HORT 560	Vegetable Crop Production	3
Select 2 from the following:		
HORT 256	Human Dimensions of Horticulture	3
HORT 515	Turf Management	3
HORT 570	Greenhouse Operations Management	3
HORT 575	Nursery and Garden Center Operations	3
		18

Horticulture specialization electives

Select an area of horticulture specialization and complete 15 to 18 hours of specialization courses, chosen in consultation with the advisor.

Fruit/vegetable production

HORT 520	Fruit Production	3
	or	
HORT 560	Vegetable Crop Production	3
Specialization electives		12
		15

Greenhouse management

HORT 376	Herbaceous Ornamental Plants	3
HORT 377	Plants in the Interior Environment	3
HORT 625	Floral Crop Production and Handling	4
Specialization electives		5
		15

Nursery management

HORT 374	Woody Plant Materials I	3
HORT 375	Woody Plant Materials II	3
AGRON 375	Weed Management	3
Specialization electives		6
		15

Turf management

HORT 374	Woody Plant Materials I	3
	or	
HORT 375	Woody Plant Materials II	3
HORT 376	Herbaceous Ornamental Plants	3
HORT 517	Golf Course Operations	3
	or	
HORT 706	Turfgrass Science	3
AGRON 375	Soil Fertility	3
Specialization electives		3
		15

Landscape design and management

HORT 374	Woody Plant Materials I	3
HORT 375	Woody Plant Materials II	3
HORT 450	Horticultural Design	3
HORT 508	Landscape Maintenance	3

HORT 551	Landscape Contracting and Construction	3
	or	
HORT 585	Arboriculture	3
Graphics elective[4]		3
		18

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[1] Landscape design/management students have a surveying elective.

[2] Landscape design/management students have a biology elective.

[3] Landscape design/management students with a design emphasis take HORT 376 Herbaceous Ornamental Plants in lieu of HORT 582 Horticulture Pest Management.

[4] Landscape design/management students have 4 to 6 hours free electives.

Agricultural economics/business electives

ECON 110	Principles of Macroeconomics	3
	or	
ECON 120	Principles of Microeconomics	3
	or	
AGEC 120	Agricultural Economics/Agribusiness	3
ACCTG 231	Accounting for Business Operations	3
Agricultural economics/business electives		9
		15

Free electives **2–10**

Golf course management specialization

Technical core

BIOL 198	Principles of Biology	4
	or	
BIOL 210	General Botany	4
CHM 210	Chemistry I	4
Computer science elective—select three CIS sections from:		
CIS 101	Topics/PC/Windows/Internet	1
CIS 102	Topics/PC/Spreadsheets	1
CIS 103	Topics/PC/Databases	1
CIS 104	Topics/PC/Word Processing	1
	or	
AGRON 455	Computer Applications in Agronomy	3
MATH 100	College Algebra	3
Math elective		3
Statistics elective—select one of the following		
STAT 320	Elements of Statistics	3
STAT 330	Elementary Statistics for Social Sciences	3
STAT 340	Biometrics I	3
STAT 350	Business and Economic Statistics I	3
		20

Communication and interpersonal relations

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
Plus 9 hours selected from the following electives		
EDSEC 706	Principles of Teaching Adult Extension	3
ENGL 300	Expository Writing III	3
ENGL 516	Written Communications for the Sciences	3
MANGT 520	Organization Behavior	3
	or	
PSYCH 564	Psychology of Organizations	3
MC 320	Principles of Advertising	3
MC 325	Fundamentals of Public Relations	3
MTKG 442	Sales Communications	3
SPCH 311	Business and Professional Speaking	3
SPCH 321	Public Speaking II	3
SPCH 322	Interpersonal Communications	3
SPCH 323	Nonverbal Communications	3
SPCH 325	Argumentation and Debate	3
	or	
SPCH 326	Small Group Discussion Methods	3
		17

Internship

HORT 590	Horticulture Internship (at a golf facility)	3
Plus one of the following:		
HORT 590	Horticulture Internship (at a golf facility)	3
HRIMD 475	Field Experience in Hotel and Restaurant Management	3
MANGT 495	Business Internship	3
		6

Humanities and social sciences

ECON 110	Principles of Macroeconomics	3
ECON 120	Principles of Microeconomics	
	or	
AGECON 120	Agricultural Economics and Agricultural Business	3
Humanities/social science electives		6
		12

Turf management

AGRON 305	Soils	4
AGRON 335	Environmental Quality	
	or	
FOR 375	Introduction to Natural Resource Management	3
AGRON 375	Soil Fertility	3
ATM 653	Irrigation Practices	3
HORT 201	Introductory Horticultural Science	4
HORT 374	Woody Plant Materials I	
	or	
HORT 375	Woody Plant Materials II	3
HORT 515	Turfgrass Management	3
HORT 517	Golf Course Operations	3
PLPTH 500	Principles of Plant Pathology	3
Plus one of the following:		
AGRON 746	Physical Properties of Soil	3
ENTOM 320	Horticultural Entomology	3
HORT 374	Woody Plant Materials I	
	or	
HORT 375	Woody Plant Materials II	3
HORT 376	Herbaceous Ornamental Plants	3
HORT 508	Landscape Maintenance	3
HORT 706	Turfgrass Science	3
		32

Business management

ACCTG 231	Accounting for Business Operations	3
ACCTG 241	Accounting for Investing and Finance	3
FINAN 450	Principles of Finance	3
MANGT 420	Management Concepts	3
MKTG 400	Marketing	3
Plus one of the following:		
AGEC 202	Small Business Operations	3
MANGT 390	Business Law I	3
MANGT 531	Personnel and Human Resource Management	3
RRES 490	Parks and Recreation Administration I	3
		18

Hospitality

Select 12 hours from the following list:		
HRIMD 120	Survey of the Hospitality Industry	1
HRIMD 220	Environmental Issues in the Hospitality Industry	3
HRIMD 230	Issues in Tourism	2
HRIMD 240	Contemporary Issues: Controlled Beverages	2
HRIMD 341	Principles of Food Production Management	3
HRIMD 342	Food Production Management	3
HRIMD 361	Principles of Lodging	2
HRIMD 421	Hospitality Service Systems	3
HRIMD 422	Cost Controls in Hospitality Operations	3
HRIMD 621	Hospitality Law	3
ASI 302	Introduction to Food Science	3
ASI 690	Principles of HACCP	1
		12

General electives **6**

Horticulture science

Bachelor of science in agriculture
130 semester hours

The horticulture science program has the same communications, general electives, math/chemical sciences, and agriculture/biological sciences requirements as listed above with the following modifications (modifications are given in *italics*) and additions.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

MATH 210	*Technical Calculus**	3
STAT 340	*Biometrics***	3
Biology elective		3–4
PHYS 115	Descriptive Physics	4
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Lab	2

*Horticulture science requires MATH 210 in lieu of MATH 100 College Algebra

**Horticulture science requires STAT 340 Biometrics in lieu of a math/stat/computer science elective.

Horticulture requirements

HORT 350	Plant Propagation	3
HORT 520	Fruit Production	3
	or	
HORT 560	Vegetable Crop Production	3
HORT 570	Greenhouse Operations Management	3
	or	
HORT 575	Nursery and Garden Center Operations	3
HORT 590	Horticulture Internship	3
		12

Horticulture specialization electives **15**

Free electives **10–13**

Business requirements

ECON 110	Principles of Macroeconomics	3
ACCTG 231	Accounting for Business Operations	3
		6

Transferring into horticulture

Many students transfer into horticulture or horticulture science from other institutions. Students considering completing course work at a community college or other four-year institution should select, from the list below, the equivalent courses prior to coming to Kansas State University. Most of the courses listed are available at some, but not all, of the community colleges and other four-year institutions in Kansas. If you are uncertain whether a course will transfer, it is advisable to check with the Kansas State University's Office of Admissions or the Office of Academic Programs in the College of Agriculture before enrolling in a course. To earn a bachelor of science degree from K-State, a maximum of 65 credit hours from a community college can be applied towards the horticulture science program or the horticulture program.

Communications requirements

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
Communications elective		3
		11

General electives

Humanities	9
Social Sciences	9
	18

Math/chemical sciences requirements

MATH 100	College Algebra*	3
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4

Organic Chemistry	3–5
Math/Stat/Comp. Science**	3
	17–19

*Students in horticulture science take MATH 210 Technical Calculus, 3

**Students in horticulture science take STAT 340 Biometrics I not a math/stat/comp. science elective.

Agriculture/biological sciences requirements

GENAG 101	Agriculture Orientation	1
BIOL 210	General Botany	4

Agricultural economics/business electives

ECON 110	Principles of Macroeconomics	3
	or	
ECON 120	Principles of Microeconomics	3
	or	
AGEC 120	Agricultural Economics/Agribusiness	3
ACCTG 231	Accounting for Business Operations	3

Horticultural therapy

Bachelor of science in agriculture
130 semester hours

Advisors: Kimmins, Mattson

Courses are required in general education, horticulture, agriculture, horticultural therapy, and humanities and/or social sciences. Specialization electives may be selected in community-based programs, corrections, gerontology, education, developmental disabilities, or mental health. Clinical internships are required during the senior year at approved psychiatric hospitals, rehabilitation centers, veterans administration hospitals, correctional agencies, geriatric and retirement centers, community-based agencies, or other approved sites.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

General education requirements

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
MATH 100	College Algebra	3
ECON 110	Principles of Macroeconomics	3
CHM 110	General Chemistry	3
CHM 111	General Chemistry Lab	1
BIOL 210	General Botany	4
	or	
BIOL 198	Principles of Biology	4
MATH/STAT/CIS elective		3
		25

Horticulture and agriculture requirements

HORT 201	Introductory Horticultural Science	4
HORT 210	Concepts of Floral Design	3
HORT 256	Human Dimensions of Horticulture	3
HORT 350	Plant Propagation	3
HORT 374	Woody Plant Material I	3
HORT 375	Woody Plant Materials II	3
HORT 376	Herbaceous Ornamental Plants	3
HORT 377	Plants in the Interior Environment	3
HORT 508	Landscape Maintenance	3
	or	
HORT 515	Turfgrass Management	3
HORT 525	Horticulture for Special Populations	3
HORT 530	Horticultural Therapy Case Management	1
HORT 535	Horticultural Therapy Field Techniques	3
HORT 520	Fruit Production	3
	or	
HORT 560	Vegetable Crop Production	3
HORT 570	Greenhouse Operations Management	3
HORT 625	Floral Crops Production/Handling	4
AGRON 305	Soils	4
PLPTH 500	Principles of Plant Pathology	3
ENTOM 325	Horticultural Entomology	3
		55

Humanities and/or social science requirements

PSYCH 110	General Psychology	3
PSYCH 505	Abnormal Psychology	3
SOCIO 211	Introduction to Sociology	3
		3

Educational psychology elective
Select 3 credits from the list:

PSYCH 280	Psychology of Childhood and Adolescence	3
EDCEP 315	Educational Psychology I	3
HDFS 110	Introduction to Human Development	3
		9

Professional electives **15**
Select 15 credits from a professional emphasis that appear on the approved departmental list. Professional emphases are community-based programs, corrections, developmental disabilities, education, gerontology, and mental health.

Business requirement
Select 6 credits from the list:

ACCTG 231	Accounting Business Operations	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MANGT 531	Personnel Management	3
		6

Internship requirement

HORT 540	Horticultural Therapy Field Experiences	6

Free electives **11**

Transferring into horticultural therapy

Many students transfer into horticultural therapy from other institutions. Students considering completing course work at a community college or other four-year institution should select from the list below the equivalent courses prior to coming to Kansas State University. Most of the courses listed are available at some, but not all, of the community colleges and other four-year institutions in Kansas. If you are uncertain whether a course will transfer, it is advisable to check with the K-State University's Office of Admissions or the Office of Academic Programs in the College of Agriculture before enrolling in a course. To earn a bachelor of science degree from Kansas State, a maximum of 65 credit hours from a community college can be applied towards the horticultural therapy program.

General education requirements

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
MATH 100	College Algebra	3
ECON 110	Principles of Macroeconomics	3
CHM 110	General Chemistry	3
CHM 111	General Chemistry Lab	1
BIOL 210	General Botany	4
	or	
BIOL 198	Principles of Biology	4
MATH/STAT/CIS elective		3

Humanities and/or social science requirements

PSYCH 110	General Psychology	3
PSYCH 505	Abnormal Psychology	3
SOCIO 211	Introduction to Sociology	3
Educational psychology elective		3
Professional electives		15

Horticulture minor

A minor in horticulture will consist of 16 credit hours, which will provide the student with a breadth of knowledge in horticulture.

Required

HORT 201	Introductory Horticultural Sciences	4
HORT 350	Plant Propagation	3

Select three courses from the following:

HORT 256	Human Dimensions in Horticulture	3
HORT 374	Woody Plant Materials I	3
HORT 375	Woody Plant Materials II	3
HORT 376	Herbaceous Ornamental Plants	3
HORT 515	Turf Management	3
HORT 520	Fruit Production	3
HORT 560	Vegetable Production	3
HORT 570	Greenhouse Operations Management	3
HORT 575	Nursery and Garden Center Management	3

Recreation resources

Society faces a future of making potentially infinite demands upon finite natural resources. Appropriate management of America's natural and recreation resources will require the best efforts of dedicated, trained professional managers. A basic objective of recreation resource managers is to provide essential goods and services while maintaining the highest environmental standards. A primary focus of recreation and park professionals is the supply of quality leisure opportunities that lead to an enhanced "quality of life." Two four-year programs are offered: (1) park resource management and (2) recreation and park administration leading to a bachelor of science degree.

Advisors: Cable, Lynch, Morgan, and Stevenson

Park resource management

Bachelor of science in agriculture
130 semester hours

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

Communications requirements

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 106	Public Speaking I	3
		9

General agriculture requirement

GENAG 101	Ag Orientation	1
		1

Natural sciences requirements

BIOL 210	General Botany	4
	or	
BIOL 201	Organismic Biology	5
GEOL 100	Earth in Action	3
CHM 110	General Chemistry	3
CHM 111	General Chemistry Lab	1
PHYS 115	Descriptive Physics	4
	or	
PHYS 101	The Physical World I	3
	and	
PHYS 103	The Physical World I Lab	1
		15–16

Political and economics systems requirements

ECON 120	Principles of Microeconomics	3
POLSC 110	Introduction to Political Science	3
		6

Social systems requirements

SOCIO 211	Introduction to Sociology	3
Western civilization/U.S. history elective		3
Cultural diversity elective		3
Art and humanities elective		3
		12

Psychological and physiological growth and development requirement

PSYCH 110	General Psychology	3
		3

Mathematics and statistics requirements

MATH 100	College Algebra	3
STAT 330	Elementary Statistics for Social Sciences	3
	or	
STAT 340	Biometrics	3
		6

Recreation resources core requirements

FOR 385	Microcomputer Applications in Natural Resource Management	3
	or	
CIS 101–104	Introduction to Personal Computer	3
MC 325	Fundamentals of Public Relations	3
RRES 210	Introduction to the Park and Recreation Profession	3
RRES 320	Recreation Group Dynamics	3
RRES 350	Parks and Recreation Practicum	3
RRES 440	Outdoor Recreation Policy	3
RRES 489	Recreation Programming	3
RRES 490	Parks and Recreation Administration I	3
RRES 492	Internship in Parks and Recreation	3
RRES 520	Research Methods for Parks and Recreation.	3
RRES 590	Park Operations and Facilities Management	3
RRES 675	Dimensions of Recreational Behavior	3
RRES 699	Parks and Recreation Administration II	3
		38

Park resource management option requirements

AGRON 305	Soils	4
BIOL 433	Wildlife Conservation	3
BIOL 529	Fundamentals of Ecology	3
FOR 285	Introduction to Forestry	3
	or	
FOR 375	Introduction to Natural Resource Management	3
FOR 330	Dendrology I	2
FOR 340	Dendrology II	2
RRES 635	Environmental Interpretation	3
		20

Park manager/ranger emphasis requirements
(Select an additional *three* courses)

AGEC 525	Natural Resource Economics	3
AGRON 501	Range Management	3
ENTOM 312	General Entomology	2
	and	
ENTOM 313	General Entomology Lab	1
FOR 643	Agroforestry	2
GEOL 515	Geology of the National Parks	3
GEOG 705	Remote Sensing of the Environment	3
HORT 374	Woody Plant Materials I	3
HORT 375	Woody Plant Materials II	3
HORT 508	Landscape Maintenance	3
HORT 515	Turfgrass Management	3
HORT 585	Arboricutlure	3
LAR 756	Design of Parks and Recreation Areas	3
PLTH 500	Plant Pathology	3
RRES 575	Management of Water Resources for Leisure	3
		8–9

Free electives 10–12

Park interpreter emphasis requirements
(Select an additional *three* courses)

BIOL 222	Field Ornithology	1
BIOL 542	Ichthyology	3
BIOL 543	Ornithology	3
BIOL 544	Mammalogy	3
BIOL 547	Herpetology	2
BIOL 551	Taxonomy of Flowering Plants	4
BIOL 612	Introductory Limnology	4
ENTOM 312	General Entomology	2
	and	
ENTOM 313	General Entomology Lab	1
MC 235	Introduction to Mass Communications	3
MC 310	Photography I	3
RRES 640	Advanced Interpretation	3
		6–11

Free electives 8–14

Recreation and park administration

Bachelor of science in agriculture
130 semester hours

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

Communications requirements

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 106	Public Speaking I	3
		9

General agriculture requirement

GENAG 101	Ag Orientation	1
		1

Natural sciences requirements

BIOL 210	General Botany	4
	or	
BIOL 201	Organismic Biology	5
GEOL 100	Earth in Action	3
CHM 110	General Chemistry	3
CHM 111	General Chemistry Lab	1
PHYS 101	The Physical World I	3
		14–15

Political and economics systems requirements

POLSC 110	Introduction to Political Science	3
ECON 120	Principles of Microeconomics	3
		6

Social systems requirements

SOCIO 211	Introduction to Sociology	3
Western civilization/U.S. history elective		3
Cultural diversity elective		3
Art and humanities elective		3
		12

Psychological and physiological growth and development requirement

PSYCH 110	General Psychology	3
		3

Mathematics and statistics requirements

MATH 100	College Algebra	3
STAT 330	Elementary Statistics for Social Sciences	3
	or	
STAT 340	Biometrics	3
		6

Recreation resources core requirements

FOR 385	Microcomputer Applications in Natural Resource Management.	3
	or	
CIS 101–104	Introduction to Personal Computer	3
MC 325	Fundamentals of Public Relations	3
RRES 210	Introduction to the Recreation and Park Profession	2
RRES 320	Recreation Group Dynamics	3
RRES 350	Parks and Recreation Practicum	2
RRES 440	Outdoor Recreation Policy	3
RRES 489	Recreation Programming	3
RRES 490	Parks and Recreation Administration I	3
RRES 492	Internship in Parks and Recreation	3
RRES 520	Research Methods for Parks and Recreation	3
RRES 590	Park Operations and Facilities Management	4
RRES 675	Dimensions of Recreational Behavior	3
RRES 699	Parks and Recreation Administration II	3
		38

Recreation and park administration option requirements

GENBA 391	Administrative Communications	3
HRIMD 230	Tourism and the Hospitality Industry	2
LAR 756	Design of Parks and Recreation Areas	3
MANGT 420	Management Concepts	3
MANGT 520	Organizational Behavior	3
MKTG 400	Marketing	3
PLAN 315	Introduction to Planning	3

Plus pick three courses (1 credit each) from the following list of lifetime exercise and/or sport activities:

Any 100-level kinesiology class		1
MSCI 102	Basic Riflery	1
RRES 200	Topics in Recreation Resources	1
		23

Free electives 17–18

Transferring into recreation resources

Many students transfer into park resource management or recreation and park administration from other institutions. Students considering completing course work at a community college or other four-year institution should select from the list below the equivalent courses prior to coming to Kansas State University. Most of the courses listed are available at some, but not all, of the community colleges and other four-year institutions in Kansas. If you are uncertain whether a course will transfer, it is advisable to check with the Kansas State University's Office of Admissions or the Office of Academic Programs in the College of Agriculture before enrolling in a course. To earn a bachelor of science degree from Kansas State University, a maximum of 65 credit hours from a community college can be applied towards the recreation resources programs.

Communications

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 106	Public Speaking	3
MC 325	Fundamentals of Public Relations	3
		12

Humanities/social sciences

SOCIO 211	Introduction to Sociology	3
PSYCH 110	General Psychology	3
Western Civilization/U.S. History		3
		9

Math/chemical/physical sciences

MATH 100	College Algebra	3
CHM 110	General Chemistry	3
CHM 111	General Chemistry Lab	1
PHYS 115	Descriptive Physics	4
	or	
PHYS 101	The Physical World I	3
	and	
PHYS 103	The Physical World I Lab	3
GEOL 100	Earth in Action	3
STAT 330	Elementary Statistics for Social Sciences	3
	or	
STAT 340	Biometrics I	3
		17

Agriculture/biological sciences

GENAG 101	Ag Orientation	1
BIOL 210	General Botany	4
	or	
BIOL 201	Organismic Biology	5
AGRON 305	Soils	4
ENTOM 312	General Entomology	2
ENTOM 313	General Entomology Lab	1
		16

Economics

ECON 120	Principles of Microeconomics	3

Horticulture courses

HORT 201. Introductory Horticultural Science. (4) II. An introduction to the principles and practices of horticultural plant systems. Plant structure and function will be discussed along with the effects of environmental factors on plant growth. General cultural practices will be described including pest control, mineral nutrition, propagation. Three hours lec. and two hours lab a week. Pr.: High school biology/botany or concurrent enrollment in BIOL 210.

◆HORT 210. Concepts of Floral Design. (3) I. An introduction to the use of flowers and related products with emphasis on fundamentals of design. Two hours rec. and three hours studio a week. For majors or nonmajors.

◆HORT 256. Human Dimensions of Horticulture. (3) I, II. Introduction to horticulture applied in schools, psychiatric and medical hospitals, corrections, vocational rehabilitation centers, elderly programs, and consumer horticulture settings. Networking the art and science of horticulture with architecture, business, social sciences, health care, horticulture, and education. Two hours lec. and one hour rec. a week.

HORT 301. Horticulture Practicum. (1–3) I, II. Experiential approach to learning horticulture through teaching. Students will assist faculty with specific horticulture courses. No more than 3 credits may be used as horticulture specialization electives nor may it substitute for a required horticulture course in the horticulture or horticultural therapy curricula. Pr.: HORT 201, junior standing, and successful completion of practicum assistance course with at least a C.

HORT 350. Plant Propagation. (3) I. Designed to develop proficiency in various skills and techniques necessary for propagation of horticultural plants. Basic fundamentals of seed structure and vegetative makeup of plants are emphasized. Two hours rec. and two hours lab a week. Pr.: HORT 201.

HORT 374. Woody Plant Materials I. (3) I. Identification, ornamental characters, site requirements, and use of woody ornamental deciduous trees and shrubs with special emphasis on the cultivated varieties. Weekly labs consist of lengthy walking campus tours to identify plant specimens. Two hours lec. and two hours lab a week. Pr.: BIOL 198, BIOL 210, or HORT 201.

HORT 375. Woody Plant Materials II. (3) II. Identification, ornamental characters, site requirements, and use of woody ornamental conifers, broadleaf evergreens, vines, ground covers, deciduous flowering shrubs, and small-to-medium-size flowering trees. Weekly labs consist of lengthy walking campus tours to identify plant specimens. Two hours lec. and two hours lab a week. Pr.: BIOL 198, BIOL 210 or HORT 201; and HORT 374.

HORT 376. Herbaceous Ornamental Plants. (3) I. Identification, ornamental characters, culture, propagation, and use of herbaceous annuals and perennials. Two hours rec. and two hours lab. a week. Pr.: BIOL 210 and HORT 201.

HORT 377. Plants in the Interior Environment. (3) II. Identification, ornamental characters, culture, propagation, and use of foliage plants in the interior environment. Two hours lec. and two hours lab. a week. Pr.: BIOL 210 and HORT 201.

HORT 390. Horticulture Topics. (Var.) I, II, S. Lectures and discussion of topics of importance to undergraduate majors. Pr.:Consent of instructor.

HORT 450. Horticultural Design. (3) I. The selection, location and arrangement of plants and other permanent features of the landscape around homes and other similar areas. Two hours lec. and two hours lab a week. Pr.: HORT 374, 375 and 376.

Undergraduate and graduate credit in minor field

HORT 508. Landscape Maintenance. (3) II. Fundamental principles of maintaining ornamental plantings of trees, shrubs, perennials, and turf in the nursery, home grounds, parks, and similar areas. Three hours rec. a week. Pr.: HORT 374 and/or 375.

HORT 515. Turfgrass Management. (3) I. Turfgrass identification and adaptation; establishment and maintenance of lawn and recreational turf areas; turfgrass pests and their control. Two hours rec. and two hours lab each week. Pr.: HORT 201 and AGRON 305.

HORT 517. Golf Course Operations. (3) II, in odd years. Strategies involved in golf course operation, including development of cultural practices, adherence to environmental regulations, personnel management, and budgeting. Two hours lec. and two hours lab. a week. Pr.: HORT 515.

HORT 520. Fruit Production. (3) II. In even years. Principles and practices of cultivating fruit and nut crops commercially. Laboratory offers experiences in pomological practices. Two hours rec. and two hours lab a week. Pr.: HORT 201 and HORT 350.

HORT 525. Horticulture For Special Populations. (3) I. An intensive study of the concepts and methods of using plants and gardening as therapeutic activities with developmentally disabled, geriatric, economically and socially disadvantaged, emotionally disturbed, or educationally deprived clients. Two hours rec. and two hours lab a week. Pr.: BIOL 210 or HORT 201.

HORT 530. Horticultural Therapy Case Management. (1) II. Guest lecturer and student presentations of topics relating to professionalism, current issues, or goals of horticultural therapy. The course is intended to help students focus expectations and assumptions about a professional career in horticultural therapy and to give them practice in articulating their understanding of the field. Client case management is used as part of career practice. One hour rec. a week. Pr.: HORT 256 and 525.

HORT 535. Horticultural Therapy Field Techniques. (3) I, II. Students under supervision will plan, conduct, and evaluate horticultural therapy activities at Manhattan institutional sites selected according to student's interest. A weekly discussion session addresses evaluation and issues of professionalism. Two hours rec. and two hours lab a week. Pr.: HORT 525.

HORT 540. Horticultural Therapy Field Experiences. (3 or 6) I, II, S. Supervised training at institutions with horticultural therapy programs to gain experience in the application and use of horticultural activities for special populations. Six months (1,000 hours) continuous internships required in psychiatric and correctional programs. Two 3-month (500 hours) internships may be completed at two different stics. Students are required to complete 6 credits of field experience before graduation. Pr.: HORT 535.

HORT 551. Landscape Contracting and Construction. (3) II. The use, interpretation, and development of planting plans (including contracting, construction, and specifications) as applied to landscape horticulture. Two hours rec. and two hours lab a week. Pr.: HORT 450.

HORT 560. Vegetable Crop Production. (3) II. In odd years. Study of production principles and cultural practices involved in the growing of vegetable crops. Two hours lec. and two hours lab or field trips a week. Pr.: HORT 201.

HORT 570. Greenhouse Operations Management. (3) I. Greenhouse systems operations and management including greenhouse layout; structures; glazing materials; heating, ventilation, irrigation, lighting, benching, growing medium handling, and fertilization systems; traffic flow; crop handling, processing and shipping. Two hours rec. and two hours lab a week. Pr.: HORT 201.

HORT 575. Nursery and Garden Center Operations. (3) II. A study of the various practices and methods of operating a commercial nursery for the production of ornamental woody plants used for landscaping purposes. Garden center layout, pricing, mark-up, inventory, plant maintenance, and financing will be discussed. Two hours rec. and three hours lab a week. Pr.: BIOL 210, HORT 350 and AGRON 305.

HORT 582. Horticultural Pest Management. (3) II. Strategies involved in horticultural pest management including types, calibration and operation of application equipment, pesticides, legal and safety issues, and non-pesticide control methods. Two hours lec. and three hours lab. a week. Pr.: HORT 201 or BIOL 210, MATH 100, and an entomology, plant pathology, or weed science course.

HORT 585. Arboriculture. (3) I. Principles and practices of maintaining shade and ornamental trees under urban environments. Two hours rec. and two hours lab a week. Pr.: HORT 201 and HORT 374 or FOR 330.

HORT 590. Horticulture Internship. (3 or 6) I, II, S. Principles of commercial or public horticulture activity including exposure to multiple phases of the working horticulture operation. Students will be placed according to specific interest. Required for horticulture majors after having completed 60 hours. Pr.: HORT 201, plus one 500-level horticulture commodity course.

HORT 625. Floral Crops Production and Handling. (4) II. The principles and commercial practices for producing floral crops emphasizing the physical responses of plants to their environment. Aspects of postharvest physiology are also covered. Three hours lec. and three hours lab a week. One Saturday field trip will be taken. Pr.: BIOL 500, HORT 350 and 570.

HORT 640. Horticulture Problems. (Var.) I, II, S. Problems and reports in floriculture, olericulture, ornamental horticulture, pomology, turfgrass, and horticultural therapy. Pr.: Consent of instructor.

HORT 706. Turfgrass Science. (3) II, in even years. Water, temperature, light, soil, and management stresses affecting turfgrass growth; cultural practices that reduce injury. Three hours lec. a week. Pr.: HORT 515.

HORT 725. Postharvest Technology and Physiology of Horticultural Crops. (3) I, in even years. A study of the principles and practices involved in the harvesting, handling and storage of horticultural products. The relationship of plant structure and physiology will be emphasized in discussing effects of postharvest handling and storage to maximize quality and shelf life of products. Three hours lec. a week. Pr.: One horticulture commodity course and BIOL 500.

HORT 751. Human Issues in Horticultural Therapy. (3) I. New developments and applications of gardening or horticultural activities for special populations will be emphasized. Procedures for management of horticultural therapy programs, designing therapeutic or rehabilitation activities, and evaluation methods will be discussed. Reading of selected research publications relating to horticultural therapy will be assigned. Three hours rec. a week. Pr.: HORT 525 and a course in statistics.

HORT 780. Topics in Horticulture. (Var.) I, II, S. Discussion and lectures of important papers and contributions in this field. Pr.: Consent of instructor.

Forestry courses

FOR 285. Introduction to Forestry. (3) II. An introduction to American forestry including: forestry heritage in the U.S., importance of forests, multiple-use concepts, management practices, utilization, protection, policy, and the profession of forestry.

FOR 330. Dendrology I. (2) I. Identification, classification, silvical characteristics, distribution, and economic significance of North American angiosperm trees. One hour rec. and three hours lab a week. Pr.: BIOL 210 or equiv.

FOR 340. Dendrology II. (2) II. Identification, classification, silvical characteristics, distribution, and economic significance of North American gymnosperm trees. One hour rec. and three hours lab a week. Pr.: BIOL 210 or equiv.

◆FOR 375. Introduction to Natural Resource Management. (3) I. A survey of historic and present-day uses, problems, and basic management approaches associated with our renewable and nonrenewable natural resources. The impact of society, economics, law, politics, and philosophy on the management and use of our natural resources will also be examined.

FOR 385. Microcomputer Applications in Natural Resource Management. (3) I. A microcomputer course designed to develop basic skills needed by natural resource management professionals. The course will emphasize use of the microcomputer for communication of written and graphic information, record keeping, decision making, budgeting, and investment analysis. Two hours lec. and two hours lab a week. Pr.: FOR 285 or 375.

FOR 641. Forestry Problems. (1–3) I, II, S. Work is offered in various fields of forestry. Pr.: Consent of instructor.

FOR 643. Agroforestry Systems. (2) II. Study of the woody and non-woody components of the land use management systems used in much of the world. Topics will include international agriculture and forestry covering the interaction of crops, livestock, and woody plants. The agroforestry concept, classification of systems, practices used worldwide, and the contribution of agroforestry to local economies of lesser developed countries will be examined. Two hours lec. a week. Field trip required. Pr.: BIOL 201 or BIOL 210 or HORT 201.

Recreation resources courses

RRES 200. Topics in Recreation Resources. (1–3) I, II, S. Discussion of topics and activities of importance in recreation resources. This course can be repeated an unlimited number of times.

RRES 210. Introduction to the Park and Recreation Profession. (2) I. Coverage of the parks and recreation profession to include, federal, state, county, and local agencies and positions. Private sector careers will also be examined. Two hours lec. a week.

RRES 320. Recreation Group Dynamics. (3) I. Principles and methods of organizing and directing individual and group leisure activities and experiences. A mixture of lecture and experiential education. Some Saturday field trips required. Two hours lec. and two hours lab a week.

RRES 350. Parks and Recreation Practicum. (2) I, II, S. Required professional employment (240 hrs., 6 weeks): a survey and application of the principles of park and recreation areas management and operations. Studies of selected aspects of natural resource management for recreation. Preparation and presentation of a comprehensive analysis of a specific assigned problem. Pr.: Sophomore in park resource management.

RRES 440. Outdoor Recreation Policy. (3) II. A survey of the history, present status, and goals of outdoor recreation policy in America. Three hours lec. a week.

RRES 489. Recreation Programming. (3) II. A study of the design, supply, and marketing of recreation programs by a variety of public, private, and commercial recreation and park agencies. Three hours lec. a week.

RRES 490. Parks and Recreation Administration I. (3) I. A focus on basic skills specific to the management of public recreation and park agencies. Includes special emphasis on finance and budgeting, organizational structure, risk management, and an introduction to policy formulation. Three hours lec. a week.

RRES 492. Internship in Parks and Recreation. (3) I, II, S. An intensive, paid practical experience with an approved agency, extending over a 10-week, 400-hour span. For seniors only.

RRES 520. Research Methods in Parks and Recreation. (3) I. A study of basic research techniques and the application of specific methodologies in the analyses of recreation and park problems. Three hours lec. per week. Pr.: STAT 330 or 340.

RRES 575. Management of Water Resources for Leisure. (3) II. A study of the management of water resources for leisure time uses. The course investigates the use of rivers, lakes, reservoirs, and marine resources. Management considerations, including agency policy formation, legal rights, use conflicts, and use valuation are covered.

RRES 590. Park Operations and Facilities Management. (4) I. Planning, execution, and supervision of field maintenance, operations, and facilities management to include: job planning, budgeting, equipment selection and maintenance, and personnel practices. Three hours lec. and two hours lab a week. Pr.: Junior standing, RRES 440 and 489.

RRES 635. Methods of Environmental Interpretation. (3) II. This course focuses on principles and techniques necessary to communicate environmental and cultural values to visitors in park areas. The philosophy, theory, design, and application of interpretive media to communicate information about the environment is studied. Two hours rec. and three hours lab a week. Field trips required. Pr.: FOR 375 and RRES 440.

RRES 640. Advanced Environmental Interpretation. (3) II. This course builds on the principles and interpretive techniques which are introduced in RRES 635. Specifically, labs emphasize development of personal interpretive skills and students are introduced to interpretive media not covered in RRES 635 (e.g., video equipment, computers, etc.) The lecture and readings focus on the philosophy of interpretation and the theoretical framework for designing and evaluating interpretive strategies. One hour lec. and four hours lab a week. Field trips required. Pr.: RRES 635.

RRES 675. Dimensions of Recreational Behavior. (3) II. A case study of the motivational factors and trends affecting recreational visitation patterns, including: attitudes, preferences, and satisfaction measurements. Three hours lec. a week. Pr.: RRES 490.

RRES 699. Parks and Recreation Administration II. (3) II. A focus on personnel management, liability and political issues and funding options for park or recreation agencies. Three hours rec. a week. Field trips required. Pr.: RRES 490.

RRES 705. Parks and Recreation Theory and Policy. (3) I, II. On sufficient demand. An analysis of the values, principles, theories, and processes of public policy development as it applies to the park and recreation profession. Three hours lec. a week. Pr.: RRES 489.

RRES 799. Problems in Parks and Recreation. (Var., 1–3) I, II, S. A special investigation of a problem in parks and recreation normally requiring a combination of experiential work, research, and writing. Pr.: RRES 520 or 590.

Plant Pathology

Fred W. Schwenk*, Head

Professors Bockus,* Claflin,* Gill,* Johnson,* Leach,* Leslie,* Schwenk,* Stuteville,* and Tisserat;* Research Professor Friebe;* Associate Professors Bowden,* Heaton,* Hulbert,* Jardine,* and White;* Assistant Professors Tang,* Trick, and Zhou;* Instructors O'Mara and Todd;* Adjunct Associate Professors Eversmeyer* and Leung; Adjunct Assistant Professors Appel and Sim; Emeriti: Professors Browder,* King, Sauer,* and Willis.*

Plant pathology is the study of plant diseases, their causes, effects, nature, and control. Opportunities for graduates in plant pathology include basic and applied research, development, and teaching.

Plant pathology minor

Students interested in the study of plant diseases should consider the plant pathology minor. The minors program in plant pathology requires a minimum of 15 semester hours.

Required courses (6 hours):

PLPTH 500	Principles of Plant Pathology	3
PLPTH 607	Plant Disease Diagnosis	2
PLPTH 613	Plant Disease Control	1

At least 9 additional hours from the following:

PLPTH 505	Biotechnology	2
PLPTH 730	Plant Nematology	3
PLPTH 835	Plant Virology	3
PLPTH 840	Plant Pathogenic Bacteria	3
PLPTH 845	Plant Pathogenic Fungi	3
Any other course in plant pathology		
AGRON 645	Soil Microbiology	4
BIOL 455	General Microbiology	4
BIOL 604	Biology of the Fungi	3
ENTOM 300	Economic Entomology	3
	or	
ENTOM 312	General Entomology	2
	and	
ENTOM 313	General Entomology Lab	1

Plant pathology courses

◆PLPTH 300. Microbes, Plants, and the Human Perspective. (3) II. The relationship of the biological world (specifically microbes) to our personal and cultural perceptions of how the world works and what our place is in it. The course focuses on microbes as they interact with plants, the plant environment, and the human connection to plants as a resource. Topics include: events and historical context of germ theory, symbiosis as biological phenomenon and analogue for human social structure, popular perception of genetically-engineered microbes. Pr.: BIOL 198.

PLPTH 500. Principles of Plant Pathology. (3) II. An introductory class in the nature of plant pathogens and the cause, effect, and control of plant diseases. Diseases of field and horticultural crops will be addressed. Two hours lec., one two-hour lab a week. Not open to students with credit for PLPTH 510 or 520. Pr.: BIOL 198, 210 or equiv., and junior standing.

PLPTH 505. Biotechnology. (2) II. The use of biotechnology and molecular genetic approaches in plant and animal sciences. Emphasis is on the use of molecular techniques for plant and animal improvement. Two hrs. lec. a week. Pr.: BIOL 198. Cross-referenced as AGRON 505.

PLPTH 597. Plant Disease Diagnosis. (2) I. Theory and principles, with laboratory and practical experience in diagnosing diseases of field crops and horticultural plants. Two hours lec. and two hours lab a week. To meet first half of semester. Pr.: PLPTH 500.

PLPTH 599. Undergraduate Research in Plant Pathology. (1–3) I, II, S. Research experience is offered in classical and molecular plant pathology and biotechnology. Pr.: Background of training needed for the research problem undertaken.

PLPTH 613. Plant Disease Control. (1) I. An overview of the principles of plant disease control and their practical application to food and horticultural commodity production. Biological, cultural, physical, chemical, and regulatory methods are discussed. Two hrs. lec. a week. To meet second half of semester. Pr.: PLPTH 500.

PLPTH 730. Plant Nematology. (3) II, in even years. An introduction to the morphology, taxonomy, and ecology of phytoparasitic and free-living nematodes found in plants, soil, and fresh water. Emphasis is on the identification and control of plant parasitic nematodes and on lab techniques used in their study. Two hours lec., one two-hour lab a week. Pr.: An introductory course in plant pathology.

PLPTH 750. Problems in Plant Pathology. (1–3) I, II, S. Work is offered in general plant pathology, plant virology, plant nematology, disease physiology, epidemiology, and disease diagnosis. Pr.: Background of courses needed for the problem undertaken.

PLPTH 760. Plant Pathology Methods. (3) I, in even years. Practical lab methods in manipulating plant pathogens with emphasis on the isolation, culture, identification, inoculation, and preservation of plant pathogenic bacteria and fungi. One hour lec. and five hours lab a week. Pr.: PLPTH 500 or equiv. Enrollment limited to 12 students.

Architecture, Planning, and Design

Dennis Law, Dean
Ray Weisenburger, Associate Dean
Lynn Ewanow, Assistant Dean

115 Seaton Hall
785-532-5950

The College of Architecture, Planning, and Design offers opportunities for professional study in architecture, interior architecture, landscape architecture, and regional and community planning.

The college consists of three academic departments: architecture, interior architecture, and landscape architecture/regional and community planning.

The curriculum in architecture is accredited by the National Architectural Accrediting Board (NAAB). The interior architecture curriculum is accredited by the Foundation for Interior Design Education and Research (FIDER). The landscape architecture curricula are accredited by the Landscape Architectural Accreditation Board (LAAB). The planning curriculum is accredited by the American Planning Association (APA) in cooperation with the Association of Collegiate Schools of Planning (ACSP).

Bachelor's degrees are offered in architecture, interior architecture, and landscape architecture. Graduate degrees are offered in architecture, landscape architecture, and regional and community planning.

Admission to the College

Enrollment in the College of Architecture, Planning, and Design is selective and limited. Students are admitted twice a year into either the fall or spring semester studio classes of Environmental Design Studies Program (ENVD). Those entering in the spring semester may be required to complete first-year courses during the summer school term.

High school applicants who seek admission to the College of Architecture, Planning, and Design must file an application for university admission and an official 6th- or 7th-semester high school transcript and ACT or SAT scores. Transfer students must file an application for university admission and all college transcripts.

Admission decisions are made on a rolling basis. Freshmen admission is based upon a review of high school course work, ACT or SAT scores, and class rank. Emphasis is placed upon performance in academic course work. Transfer admissions is based upon a review of college course work.

Application materials may be obtained by contacting the Office of Admissions.

University General Education

The College of Architecture, Planning, and Design assures that all degree programs provide breadth through the completion of 18 credit hours to fulfill the university's general education requirements. These 18 credit hours must be approved university general education courses from outside the professional major designation, and may overlay with the general studies requirements in the humanities, social sciences, sciences, and/or business as required by each department within the college.

Al least 6 credit hours of the 18 credit hours must be taken in courses numbered 300 or above and no more than two courses from any single discipline (as defined by the course prefix) may be counted toward the required 18 credit hours of university general education electives.

Courses used to fulfill university general education credit cannot be in the student's major.

Each department within the college specifies particular distribution of the general education electives in order to assure an educational context enriched by the liberal arts and sciences as well as other professional programs. Students develop their programs of university general education with the ongoing assistance of their academic advisor.

Electives

Those electives listed with a specific designation, such as professional, must be chosen from those courses in the indicated field that are open to the student.

Additional information concerning acceptable electives is available from the dean's office/ student services or departmental offices.

In course descriptions, university general education courses are marked with ◆. The Degrees section at the front of this catalog lists other university general education courses. A list of currently offered university general education courses is available on the web at these addresses:
- http://www.ksu.edu/course/
- http://www.ksu.edu/educadv/

General Requirements

Secondary majors

Certain departmental courses have been approved for credit toward the secondary major in natural resources and environmental sciences, gerontology, international studies, American ethnic studies, and women's studies. A listing of the approved courses may be found in the Secondary Majors section of this catalog.

Student projects

All programs involve extensive project work. Students are advised to budget sufficient funds to cover the cost of materials and supplies. Material costs will be higher than those published for nonstudio curricula.

Student projects, assignments, presentations, and models may be retained by the various departments. Students are advised to assemble photographic files of their work for their portfolios.

Transfer students

A transfer program of study can be completed elsewhere and credits transferred to the college so a student can enter the second year of the program. In addition to credit for general studies courses, transfer credit for professional courses equivalent to those offered by the College of Architecture, Planning, and Design will be accepted if earned in environmental design programs accredited by NAAB, FIDER, or LAAB. Students who have questions concerning the application of specific transfer courses should contact the dean's office/student services.

Options

International study

Several international study programs are offered by the college. Students earn academic credit studying in Italy, Japan, France, Denmark, Germany, the Czech Republic, or England.

Internship

Internships are available with private practitioners, corporations, and government agencies. Students earn academic credit and money for internship. Specific requirements vary among the departments.

Extracurricular activities

The College of Architecture, Planning, and Design offers opportunities for students to become involved in student government, student chapters of professional societies, Open House, and the student journal, *Oz*.

Environmental Design Studies

All students in the first-year undergraduate programs of the College of Architecture, Planning, and Design are enrolled in the Environmental Design Studies Program. In the first year, students are introduced to the knowledge, concepts, attitudes, methods, and skills common to the environmental design professions of architecture, interior architecture, interior design, landscape architecture, and regional and community planning. After successful completion of these course requirements students continue their studies in one of the professional curricula in the degree-granting departments.

Courses in the Environmental Design Studies curriculum, which carry a DSFN designator, are offered in a joint venture for students in the design programs from two colleges, Architecture, Planning, and Design, and Human Ecology. The three DSFN-designated courses form part of a common foundation of the environmental design fields.

Participation in environmental design studies courses, together with a close working relationship with faculty and the academic advisor, helps students make informed career choices within, and sometimes outside, the fields of study represented.

Transfer students may enter the Environmental Design Studies Program in either the fall or spring terms and will be placed in the program according to the college-level work which they have already completed. It is sometimes possible to complete the basic ENVD requirements in one semester and a summer.

Environmental design studies
100 ENVD

The curriculum for the first year forms the foundation of the five-year accredited professional programs in architecture, interior architecture, and landscape architecture.

First semester

DSFN 201	Environmental Design Studio I	4
MATH 100	College Algebra	3
ENVD 250	History of the Designed Environment I	3
DSFN 203	Survey of the Design Professions	1
ENGL 100	Expository Writing I	3
		14

Second semester

DSFN 202	Environmental Design Studio II	4
PHYS 115	Descriptive Physics	5
ENVD 251	History of the Designed Environment II	3
General education elective		3
SPCH 105	Public Speaking IA	2
		17

High school mathematics prerequisites: Entering freshman or transfer students should have fulfilled the minimum prerequisites of: algebra I (one unit); plane geometry (one unit); algebra II (one unit); and trigonometry (one-half unit) before entering the College of Architecture, Planning, and Design. The prerequisites may be fulfilled at K-State, or elsewhere, with the exception of geometry, which is not taught at K-State. Completing these courses at K-State will extend the time required to complete the degree program.

After satisfactory completion of the environmental design studies, students are eligible to apply for admission to the Department of Architecture, the Department of Interior Architecture, the Department of Landscape Architecture/Regional and Community Planning, or the Department of Clothing, Textiles, and Interior Design in the College of Human Ecology.

Environmental design studies courses

DSFN 201 and 202. Environmental Design Studio I and II. (4 each). Foundation studies introducing principles, processes, and vocabularies of environmental design. Instruction in two and three dimensional visualization of objects and spaces. Instruction in the use of instrument-aided drawing, freehand drawing, and model building to represent and communicate design ideas at different scales of observation. Pr.: Admission to the College of Architecture, Planning, and Design, the College of Human Ecology, or permission of the dean of either college.

DSFN 203. Survey of the Design Professions. (1) I. Overview of the design professions. Comparative study of the working methods, and societal and occupational roles of the architect, interior architect, landscape architect, and planner.

ENVD 205. Graphics I. (2) I, II, S. Instruction in instrument-aided drawing as a basic tool for communicating information about environmental subjects. Four hours of studio a week. Pr.: Permission of the College of Architecture, Planning, and Design.

ENVD 206. Graphics II. (2) I, II, S. Instruction in the principles and methods of perspective drawing. Perspective drawing is used as a basic tool for communicating information about design components and properties. Four hours of studio a week. Pr. ENVD 205.

ENVD 250 and 251. History of the Designed Environment I and II. (3 each) A chronological survey of the built and designed environment in the context of the socio-cultural, artistic, technological, economic, and political factors. Three hours lecture per week.

ENVD 250. History of the Designed Environment I. (3) I. The history of the designed environment from ancient times to the 12th century.

ENVD 251. History of the Designed Environment II. (3) II. The history of the designed environment from the 12th century to the mid-18th century. Pr.: ENVD 250 or permission of instructor.

ENVD 299. Problems in Basic Design. (Var.) I, II, S. A study of specified problems in elementary environmental design under the guidance of a member of the staff. Pr.: Approval of assistant dean.

Architecture

Mark Shapiro, Head

Professors Coates,* Garvin, Hoag,* Kremer,* Norris–Baker,* Seamon,* Stotesbury,* and D. Watts;* Associate Professors Charney,* Condia,* Jones, Krstic, Mayo, McNamara,* Ornelas,* Sachs,* Selfridge,* Siepl–Coates,* Streeter, and C. Watts;* Assistant Professors Arens, Debelius, Imel, Johnson, Norheim, Pecar, and Simon; Adjunct Professors Barucchieri, Bowman, Hoffman, Nelson, Singleton, and Seligson; Emeriti: Professors Chang,* Christensen,* Ernst,* Fischer,* Foerster,* Krider,* Sanner,* Slack, and Wendt.

Philosophy statement

The program prepares students to enter the profession of architecture, a career that is characterized by change and diversity. Design is at the center of a professional and critical discourse reinforced by liberal studies. A body of artistic, theoretical, social and technical knowledge, understanding, and skill—a background that all architects share—is offered as the basis for the development of individual interests and aptitudes.

As part of the Department of Architecture's goal of promoting a socially and environmentally aware professional architect, the department requires a minimum of 18 university general education elective credits, of which at least 6 must be in courses numbered 300 or above. At least 15 must be outside the College of Architecture, Planning, and Design. No more than two university general education courses may be taken in a single discipline.

Beginning students are encouraged to select specific introductory-level general education courses with the intention that they may develop concentration of arts, sciences, and/or humanities by taking advanced courses in their later years.

Special activities and programs

An integral part of the architecture curriculum is the opportunity, during the fourth year, to study abroad for a semester at our facility in Castiglion Fiorentino, Italy, or at the Technical University in Prague. In the past students have studied in Denmark and Britain, and we are continuously exploring new opportunities.

Other off-campus programs include a semester for fourth- and fifth-year students in our Kansas City Academic Program, housed in the historic Epperson House near the Nelson Atkins Museum, Kansas City Art Institute, and the Country Club Plaza district. Each spring third-year students spend a week in Chicago studying the city's rich architecture and urban design heritage. Summer study trips are organized in which students and faculty have traveled to France and Japan. Fourth-year students may elect to participate in architectural internships in professional offices in the United States and abroad.

To become an architect, almost every state requires an accredited professional degree. Two types of degrees are accredited by the

National Architectural Accrediting Board (NAAB): the bachelor of architecture, which requires a minimum of five years of study and the master of architecture, which requires a minimum of three years following an unrelated bachelor's degree or two years following a related preprofessional bachelor's degree.

These professional degrees are structured to educate architects. Those who aspire to registration and licensure should consider a program of this type. Four-year preprofessional degrees are not accredited by NAAB. Such degrees provide students with less extensive study of architecture than do professional degrees.

A preprofessional degree is useful for those who wish a strong foundation in the field of architecture. It will prepare those who wish to continue their architectural education in a professional program, or to seek employment options in related areas.

The bachelor of architecture degree offered by Kansas State University is the NAAB accredited professional degree.

Computer applications

The department recognizes digital technology as a valuable asset and is committed to offering access to a variety of opportunities for students to develop their computer skills and understanding.

For updated information regarding recommended computer platforms and software, contact the department.

Architecture program

115 AR

Total hours required for graduation 164
(including ENVD program)

This curriculum is subject to regular revision. Students should obtain a copy of the current curriculum when they enter the architecture curriculum.

For the curriculum requirements for the first two semesters, see Environmental Design Studies earlier in this section.

Third semester

ARCH 302	Architectural Design Studio I	4
	or	
ARCH 303**	Architectural Design Studio IA	6
ARCH 248	Building Science	3
ARCH 348	Structural Systems in Architecture I	3
ARCH 350	History of the Designed Environment III	3
ENGL 200	Expository Writing II	3
		16

Fourth semester

ARCH 304	Architectural Design Studio II	4
ARCH 449	Structural Systems in Architecture II	3
ARCH 325	Environmental Design and Society	3
ARCH 413	Environmental Systems in Architecture I	4
University general education electives*		3
		17

Fifth semester

ARCH 403	Architectural Design Studio III	5
ARCH 452	Structural Systems in Architecture III	3
ARCH 433	Building Construction Systems in Architecture I	3
ARCH 472	Computer Applications in Architecture	3
Univeresity general education electives		3
		17

Sixth semester

ARCH 404	Architectural Design Studio IV	5
ARCH 434	Building Construction Systems in Architecture II	3
ARCH 453	Structural Systems in Architecture IV	3
ARCH 514	Environmental Systems in Architecture II	3
LAR 500	Site Planning and Design	3
		17

Seventh semester

ARCH 605	Architectural Design Studio V	5
ARCH 515	Environmental Systems in Architecture III	3
ARCH 650	Architectural Programming	3
ARCH 720	Environment and Behavior	3
Univeresity general education electives		3
		17

Eighth semester

ARCH 606	Architectural Design Studio VI	5
Professional support electives*		10
		15
	or	
ARCH 505	Architectural Internship Part A	12
ARCH 506	Architectural Internship Part B	3
		15

Ninth semester

ARCH 706	Architectural Design Studio VII	5
ARCH 705	Project Programming	2
ARCH 753	Professional Practice	3
Univeresity general education electives (300 level +)		3
		16

Tenth semester

ARCH 707	Architectural Design Studio VIII	5
ARCH 680	Development Analysis	3
Professional support electives*		9
		17

*A minimum of university 18 university general education elective credits, of which at least 6 must be in courses numbered 300 or above. At least 15 must be outside the College of Architecture, Planning, and Design. No more than two university general education courses may be taken in a single discipline.

A minimum of 19 professional support electives are required, of which a minimum of 6 credit hours must be taken in architectural history/theory and 3 credit hours in planning.

**For transfer students only.

Architecture courses

◆**ARCH 240. Science, Technology, and Architecture.** (3) I, II. An exploration of the interrelationships between architecture and various sciences including the technological applications of selected scientific theories.

ARCH 248. Building Science. (3) I. Instruction in the materials of building and landscape design; sources, characteristics and uses in design and construction; emphasis on evaluation and selection. Two lectures and one recitation per week. Pr.: Second-year standing and PHYS 115.

◆**ARCH 290. Architecture Through the Ages.** (3) I, II. An introductory survey of the history of architecture worldwide from its prehistoric beginnings up to the present day. May not be taken for credit by students enrolled in the College of Architecture, Planning, and Design.

◆**ARCH 301. Appreciation of Architecture.** (3) I, II, S. An analysis of the evolution of architectural styles to determine the relation of architectural expression to the needs of society. Three hours rec. a week. May not be taken for credit by students enrolled in the architecture, landscape architecture, or interior architecture curricula.

ARCH 302. Architectural Design Studio I. (4) I. Instruction in architectural design focusing on the application of elements and principles of form and space in design. Instruction in the use of techniques for visually representing design ideas. Pr.: Admission to the architecture program and DSFN 102.

ARCH 303. Architectural Design Studio 1A. (6) I. This course integrates material from Environmental Design Studio I and II with ADS I. Twelve hours of studio a week. Pr.: For transfer students; 9 or more credit hours of graphics, design, and freehand drawing and enrollment in the Department of Architecture.

ARCH 304. Architectural Design Studio II. (4) II. Instruction in architectural design focusing on the synthesis of basic social, functional, technical, and aesthetic factors in design. Continued instruction in techniques for visually representing design ideas. Pr.: ARCH 302.

ARCH 325. Environmental Design and Society. (3) II. Instruction in behavioral, cultural, and ecological factors that contribute to successful environmental design; considers how the design process is affected by a conceptual point of view. Case studies from architecture, landscape architecture, interior architecture, and interior design. Three hours lecture a week. Pr.: Second-year standing or permission of instructor.

ARCH 348. Structural Systems in Architecture I. (3) I. Introduction to statics; force analysis and the study of forces in equilibrium; principles of statics as applied to the study of simple elemental structures; the origin, the nature, and the action of loads on structural systems. Instruction in the use of statics in the preliminary stages of building design. Three hours lecture, two hours recitation a week. Pr.: PHYS 113, MATH 100.

ARCH 350. History of the Designed Environment III. (3) I. The history of the designed environment from the mid-18th century through present. Pr.: ENVD 251 or permission of instructor.

ARCH 403 and ARCH 404. Architectural Design Studio III and IV. Relation of structures to their environment; client and community restraint; development of building programs; synthesis of functional, technical, and aesthetic considerations in the design of structures for human use. Twelve hours studio a week.

ARCH 403. Architectural Design Studio III. (5) I. Pr.: ARCH 402 and not more than one D in an architectural design course.

ARCH 404. Architectural Design Studio IV. (5) II, S. Pr.: ARCH 403 and not more than one D in an architectural design course.

ARCH 413. Environmental Systems in Architecture I. (4) II. Instruction in bioclimatic and ecological design principles as a basis for architectural and landscape design. Emphasis on passive solar heating and cooling and daylighting. Three hours lecture and one hour recitation a week. Pr.: PHYS 113 and enrollment in a professional program in the college.

ARCH 433 and ARCH 434. Building Construction Systems in Architecture I and II. (3 each). These courses focus on developing an understanding of how materials and systems assembly reinforce and extend theintentions of the designer as well as developing an understanding of the strategies and techniques for integration and coordination of the building components. During the second semester of the two-semester sequence, students produce a set of construction documents. Methodologies for evaluating, selecting, and joining building systems and materials are introduced. Economic factors, building codes, and accessibility are studied. Material properities, sequence of assembly, and construction processes are reviewed.

ARCH 433. Building Construction Systems in Architecture I. (3) II. Pr.: ARCH 248, 348, and admission to a professional program in the college. Three hours lec. per week.

ARCH 434. Building Construction Systems in Architecture II. (3) I. Pr.: ARCH 433. Six hours of studio per week.

ARCH 449. Structural Systems in Architecture II. (3) II. Instruction in strength of materials focusing on the behavior of building materials under loading; their ability to resist deformation and failure. Instruction in sizing simple structural elements. Three hours lecture, two hours recitation a week. Pr.: ARCH 348.

ARCH 452. Structural Systems in Architecture III. (3) I. Instruction in the design of building structures as whole systems. Instruction in the principles of structural subsystem design; emphasis on the overall structural behavior and subsystems integrity required to achieve a variety of building forms. Instruction in strategies for the use of approximation in the manipulation of key quantitative properties of whole systems and major subsystems in building design. Three hours lecture, two hours workshop/test each week. Pr.: ARCH 449.

ARCH 453. Structural Systems in Architecture IV. (3) II. Instruction in the design of building structures as whole systems; overall-to-specific systems behavior and manipulative design of major subsystems. Emphasis on the design of subsystems and subsystem components as they are affected by structural material. Instruction in specialized issues associated with the analysis and design of high rise and long-span building structure, including foundation, constructive, and economic factors which affect building design. Three hours lecture, two hours workshop/test each week. Pr.: ARCH 452.

ARCH 472. Computer Applications in Architecture. (3) I, II, S. Introduction to technical, representational, and theoretical issues of digital design tools in architecture. Acquisition of skills to independently employ three-dimensional design, modeling, rendering, image processing, two-dimensional drawing, and other applications. Students are strongly encouraged to provide their own portable computers and software. Two hours of lec. and two hours of lab per week. Pr.: Enrollment in one of the degree-granting programs of the college.

ARCH 475. Problems in Architectural Presentation. (Var.) I, II, S. Study of various methods of graphically representing architectural problems to develop professional office techniques. Pr.: Second-year standing and approval of instructor.

ARCH 505. Architectural Internship, Part A. (12) II. Thirty weeks off-campus work study program with an approved professional, building industry, government, or non-profit agency sponsor. Must be enrolled concurrently with ARCH 506, and each course must be successfully completed before credit is awarded in either. This course is graded CR/NCR only and is not for graduate credit. Pr.: ARCH 434, ARCH 605, not more than one D in an architectural design course, and approval of the internship coordinator.

ARCH 506. Architectural Internship, Part B. (3) II. Preparation of internship journals and employer profiles during the approved 30-week off-campus work-study program in ARCH 505, and preparation of an internship analysis paper during the first semester after ARCH 505. Must be enrolled concurrently with ARCH 505, and each course must be successfully completed before credit is awarded in either. This course is letter-graded only and is not for graduate credit. Pr.: ARCH 434, ARCH 605, not more than one D in an architectural design course, and approval of the internship coordinator.

ARCH 514 and ARCH 515. Environmental Systems in Architecture II and III. (3 each) Criteria for selection and application of natural and mechanical environmental control systems in architecture. Focus on the integration of thermal, illumination, sanitary, movement, and acoustical systems with the building fabric and the natural environment. Contemporary and developing approaches are explored. Three hours lec. a week.

ARCH 514. Environmental Systems in Architecture II. (3) II. Pr.: ARCH 413.

ARCH 515. Environmental Systems in Architecture III. (3) I. Pr.: ARCH 413.

ARCH 566. Problems in Architecture Design. (Var) S. Study of specific design problems under the direct supervision of a member of the architectural faculty. Pr.: Approval of instructor.

ARCH 601. Topics in History of the Designed Environment. (3) I, II. For the concentrated study of a particular period or subject in the history of the built environment. Seminars, readings, discussions, and projects. May be taken by majors in the College of Architecture and Design for a total of 12 hours credit. Three hours rec. a week. Pr.: ENVD 251 or approval of instructor.

ARCH 605. Architectural Design Studio V. (5) I, II. Problem analysis and program development, generalization of alternate solutions, and selection and refinement of the building design. Twelve hours studio a week. Pr.: ARCH 404 and not more than one grade of D in an architectural design course, and LAR 500 or concurrent enrollment in LAR 500.

ARCH 606. Architectural Design Studio VI. (5) I, II. Continuation of ARCH 605. Increased complexity of function and space definition systems. Relating environmental technology to total design. Twelve hours studio a week. Pr.: ARCH 605 and not more than one grade of D in an architectural design course.

ARCH 655. Foreign Seminar. (Var.) I, II, S. Group observation of design examples (ancient or modern) of a selected region, conducted in situ, to study significant aspects of environment, culture, and technology as relating to design solutions.

Undergraduate and graduate credit

ARCH 650. Architectural Programming. (3) I, II. An introductory course surveying the basic philosophies and methodologies for architectural programming; emphasis on the comparative evaluation of different strategies and their integration within the process of design. Pr.: Senior standing or permission of the instructor.

ARCH 656. Preservation Documentation. (3) I,II. Investigation of existing buildings and their settings; documenting design qualities, history, materials, systems, construction techniques, landscape, and physical and functional changes over time, using Historic American Building Survey Standards. Pr.: Senior standing and proficiency in drafting.

ARCH 657. Preservation Principles. (3) I. Examination of theoretical and practical aspects of preservation; background and current issues; design considerations. Pr.: Senior standing or permission of instructor.

◆ARCH 670. History of American Architecture and Allied Design I. (3) I. The history of American architecture including aspects of interior architecture, landscape architecture, urban planning, and preservation. This course investigates how the built forms of various colonial settlers in America responded to a new environment and how a distinctive American culture eventually took shape by the end of the 1800s. Pr.: ENVD 250 and 251 or approval of the instructor.

◆ARCH 671. History of American Architecture and Allied Design II. (3) II. The history of American architecture including some aspects of interior architecture, urban planning, landscape architecture, and preservation. This course surveys those distinctively American styles of design which originated in the late 1800s and traces their impact on world architecture and how outside influences shaped American design from that time period up to present. Emphasis is placed upon the interplay of formal and functional concerns in architectural design. Pr.: ENVD 250 and 251 or approval of the instructor.

ARCH 680. Development Analysis. (3) I, II. An examination of various development characteristics and components and their crucial interactive nature which leads toward success or failure of building and land development. Development factors investigated include: market analysis, location uses and users, cost/benefits, nonmonetary benefits, financial returns expected and needed, financial incentives for investors, and feedback into the design process. Pr.: Admission to the professional program.

ARCH 703 Environmental Aesthetics. (3) I, II. Problems involving aesthetics in areas related to student's major field. Three hours a week. Pr. : Senior standing in architecture, landscape architecture, interior architecture, urban design.

ARCH 704. Environmental Seminar. (Var.) I, II. Environmental systems related to human perception, reactions, and behavior. Pr.: Senior standing.

ARCH 705. Project Programming. (2) I, II. The development of a program for ARCH 707 Architectural Design VIII under the direction of a faculty member. Pr.: ARCH 606, ARCH 650, and approval of the faculty committee.

ARCH 706. Architectural Design Studio VII. (5) I, II. Integration of the physiological, psychological, and sociological parameters in the design of environments. Analysis, programming, and planning problems, increased complexity of function and space definition systems. Relating environmental technology to total design. Twelve hours studio a week. Pr.: At least 2.0 GPA in required third-, fourth-, and fifth-year courses which have been taken; not more than one D in an architectural design course; at least a 1.75 GPA in required third-, fourth-, and fifth-year courses other than design which have been taken; either ARCH 606 or 505; and 506; ARCH 434, or ARCH 433 and conc. enrollment in ARCH 434; ARCH 515, or ARCH 514 and conc. enrollment in ARCH 515; and ARCH 452.

ARCH 707. Architectural Design Studio VIII. (5) I, II. Development of the student's project programmed in ARCH 705, under the direction of a faculty committee. Project must demonstrate a high level of achievement in systematic and comprehensive thinking, application of resources, and communication of total process. Twelve hours studio a week. Pr.: At least 2.0 GPA in required third-, fourth-, and fifth-year courses other than design which have been taken; ARCH 706; ARCH 434; ARCH 515; ARCH 453; or ARCH 452 and conc. enrollment in ARCH 453.

ARCH 710. Topics in Architectural Design Methods. (3) I, II. Intensive review of selected design methodologies, including systematic and computer-based approaches to problem definition and project design; emphasis upon the comparative evaluation of problem-solving strategies within the architectural design process. Pr.: Advanced undergraduate or graduate standing.

ARCH 715. Theory of Design. (3) I, II. Analysis of theories and philosophies in the design professions, including those in related societal and technological fields. Pr.: ARCH 404 or IAR 602 or LAR 641.

ARCH 716. Environmental Systems in Architecture. (3) I, II. Study of site-specific microenvironmental systems and the designed microenvironment about buildings. Exploration of their interaction and manipulation to meet human comfort requirements and achieve resource-efficient site and building design. Pr.: ARCH 413 and 403, or graduate standing.

ARCH 720. Environment and Behavior. (3) I, II. An introductory course investigating the relationship between human behavior and the design of the physical environment, identifying those basic psychological and social concepts which influence and are influenced by the built environment. Three hours lec. rec. a week. Pr.: Senior standing or permission of instructor.

ARCH 725. Architectural Research Methods. (3) I, II. An introductory course surveying the basic philosophies and methodologies of science and research as they apply to the field of architecture. Special emphasis will be placed on those methods appropriate for investigating human response to the built environment. Three hours lec./seminar a week. Pr.: Senior standing.

ARCH 730. Environment and Aging. (3) I, II. An exploration of the aging process related to those factors in the architecturally designed environment that hinder and facilitate successful adaptation by the aging individual. Three hours lec./seminar a week. Pr.: Senior or graduate standing.

ARCH 735. Topics in Building Construction Systems in Architecture. (1–4) I, II. Advanced study of the relationship of conceptual and/or technological factors of building construction to architecture. Pr.: ARCH 434; or graduate standing and consent of instructor.

ARCH 740. Building-Related Health and Safety. (3) I, II. Multidisciplinary concepts and applications of building-related health and safety in the design, construction, and operations of residential, commercial, and institutional buildings. Three hours: Initially lec./rec. followed by fieldwork analysis, documentation, and reporting. Pr.: Senior or graduate standing.

ARCH 752. Structural Systems in Architecture V. (Var.) I, II. Study of the relationship of conceptual and/or technological factors of structure to architectural design in more depth, or in a broader context of form-determining interactions than that presented in ARCH 452 and ARCH 453. Pr.: ARCH 453.

ARCH 753. Professional Practice. (3) I. Studies of conventional and newly developing methods of professional design practice. Instruction in the relationships of architects, landscape architects, interior architects and other professions to users, clients, construction industry, society, government, and one another. Two hours lecture and one hour recitation. Pr.: ARCH 433.

ARCH 765. Problems in Architecture. (Var.) I, II, S. A study of specific architectural problems under the direction of a member of the department staff. Pr.: Approval of instructor.

Interior Architecture

Stephen M. Murphy, Head

Professor Haycock; Associate Professors Brown, Bullock, Dubois, Hastings, Husseini, Murphy, Owens–Wilson,* Thompson, and Throyer; Assistant Professors Anderson, Borchers, and Davidson; Instructor Wunderlich; Emeritus Professors Durgan and McGraw; Adjunct Professors Paolo Barucchieri, Castiglion Fiorentino, Italy; Franz Puschough, Frank Sander, and Klaus Steinman, Trier, Germany.

The bachelor of interior architecture's professional program consists of four years of study following the successful completion of the one-year environmental design studies program. The Department of Interior Architecture's five-year program is one of the first curricula in this profession to be recognized and accredited by the Foundation for Interior Design Education Research in the United States.

The interior architecture curriculum prepares the students to enter a professional career in space planning within commercial, institutional, and industrial design. Experience is gained through the emphasis placed upon the department's educational programs in interior architectural space planning, furniture design, and product design. After an introduction to basic interior space planning, students undertake studio exercises that include the programming and designing of spaces. Special emphasis is placed on studying spatial organization, behavior analysis, space component design, furniture design and construction, product and exhibit design, the integration of environmental systems, building rehabilitation, and the preparation of working drawings and contract documents.

Computers in the studio

The interior architecture department provides a supportive and integrated studio beginning with the fifth semester, where students can bring in their own Computer Aided Design capable computers. The department provides cabinets, peripheral equipment, and a secure environment with updated electrical and data connections. Use of the computer and appropriate software is integrated into all the departmental courses from this semester on. Computers are the tool of choice in today's design offices, and the interior architecture department strives to fully educate its students on their uses.

Internship program

Students may apply their skills in a professional design environment while receiving 15 hours credit during a 30-week, full-time, paid internship. This is an available option for the spring semester of the fourth year.

Foreign study program

During the fourth year, interior architecture students may participate in the semester-long exchange program between K-State and the interior architecture program at Trier, Germany. This program is open to students on a space-available basis only.

Another foreign studies option also exists with the college's Italian Studies Program. This program allows students from the college's three professional programs to participate in a valuable learning experience at Santa Chiari, which is located in Castiglion Fiorentino.

A semester of study is available at the Technical University of Prague.

These study options can be taken as an alternative to the internship program or remaining at K-State for the semester. Students may earn 15 hours of credit while overseas.

General education philosophy

The responsibilities of the interior architect/designer encompass all spaces within environments built for human habitation. Our goal is to develop creative professionals who can synthesize information and analyze problems from many different perspectives. New technologies affect the skills and knowledge required for designers.

The best preparation for the future is an education that will enable graduates to adapt to a changing world. Adaptation to change requires that the graduate draw on history and on the experience of many cultures and apply the theories and methods of empirical investigation. A sound curriculum for professional interior architectural education balances the broad cultural aspects of education and the specialized practical content integral to the profession.

Interior architecture program

150 IAR

Total hours required for graduation—156

For the curriculum requirements for the first two semesters, see Environmental Design Studies, earlier in this section.

Third semester

IAR 248	Building Science	3
IAR 301	Interior Architecture Design Studio I	3
IAR 304	Interior Architecture Design Studio I Lecture	1
IAR 430	Visual Communication	2
ARCH 348	Structural Systems in Architecture I	3
University general education elective		3
		15

Fourth semester

IAR 302	Interior Architecture Design Studio II	3
IAR 305	Interior Architecture Design Studio II Lecture	1
IAR 416	History of Furniture	2
ARCH 413	Environmental Systems in Architecture I	4
ARCH 449	Structural Systems in Architecture II	3
CT 260	Textiles	3
		16

Fifth semester

IAR 404	Interior Architecture Design Studio III	4
IAR 405	Interior Architecture Design Studio III Lecture	1
IAR 409	Materials and Finishes	2
IAR 410	Interior Architecture Microcomputing	2
IAR 413	Materials and Finishes Lab	1
IAR 420	Theory of Furniture Design	2
IAR 456	Theory of Product Design	2
ARCH 433	Building and Construction Systems in Architecture I	3
		17
	or	
IAR 402	Product Design Studio I Lecture	1
IAR 403	Product Design Studio I	3
IAR 409	Materials and Finishes	2
IAR 410	Interior Architecture Microcomputing	2
IAR 413	Materials and Finishes Lab	1
IAR 420	Theory of Furniture Design	2
IAR 455	Product Design Illustration	1
IAR 456	Theory of Product Design	2
ARCH 433	Building and Construction Systems in Architecture I	3
		17

Sixth semester

IAR 400	Product Design Studio I Lecture	1
IAR 403	Product Design Studio I	3
IAR 407	Design Workshop I	3
IAR 455	Product Design Illustration	1
ARCH 434	Building and Construction Systems in Architecture II	3
ARCH 514	Environmental Systems in Architecture II	3
		14
	or	
IAR 404	Interior Architecture Design Studio III	4
IAR 405	Interior Architecture Design Studio III Lecture	1
IAR 407	Design Workshop I	3
ARCH 434	Building and Construction Systems in Architecture II	3
ARCH 514	Environmental Systems in Arch II	3
		14

Seventh semester

IAR 600	Interior Architecture Design Studio IV Lecture	1
IAR 602	Interior Architecture Design Studio IV	4
IAR 608	Design Workshop II	3
ARCH 515	Environmental Systems in Architecture III	3
ENG 200	Expository Writing II	3
University general education elective		3
		17

Eighth semester

IAR 606	Interior Architecture Design Studio V	4
IAR 607	Interior Architecture Design Studio V Lecture	1
Free electives		10
		15
	or	
IAR 644	Interior Architecture Internship	12
IAR 645	Interior Architecture Internship Reports	3
		15

	or	
IAR 646	Interior Architecture Foreign Studies	12
IAR 647	Interior Architecture Foreign Report	3
		15

Ninth semester

IAR 705	Interior Architecture Design Studio VI	4
IAR 708	Interior Architecture Design Studio VI Lecture	1
IAR 714	Furniture Design Workshop	3
IAR 753	Professional Practice	3
IAR 760	Interior Architecture Seminar	3
University general education elective		3
		17
	or	
IAR 706	Product Design Studio II	4
IAR 707	Product Design Studio II Lecture	1
IAR 714	Furniture Design Workshop	3
IAR 753	Professional Practice	3
University general education electives		6
		17

Tenth semester

IAR 706	Product Design Studio II	4
IAR 707	Product Design Studio II Lecture	1
IAR 730	Facility Management	2
University general education electives		6
		13
	or	
IAR 705	Interior Architecture Design Studio VI	4
IAR 708	Interior Architecture Design Studio VI Lecture	1
IAR 730	Facility Management	2
IAR 760	Interior Architecture Seminar	3
University general education elective		3
		13

Interior architecture courses

Undergraduate credit

IAR 248. Building Science. (3) I. Instruction in the materials of building and landscape design; sources, characteristics, and uses in design and construction; emphasis on evaluation and selection. Two lec. and one rec. per week. Pr.: Second-year standing and PHYS 115 and 460.

IAR 301. Interior Architecture Design Studio I. (3) I. Design vocabulary, abstract design, form and space generation, use of light and color theory, application of design process, idea generation, creativity, and diagraming are all general topics that underpin the second year. These concepts are necessary to reinforce graphic development, typography, presentation, and layout carried over from previous semesters. Projects that utilize these topics will include an introduction to human scale and anthropometries, perspective as applied to small scale spaces, environmental analysis, and introduction to structure in design. Pr.: DSFN 202 and admission to professional program in interior architecture.

IAR 302. Interior Architecture Design Studio II. (3) II. Continuation of topics covered in previous semesters will allow for more proficiency through multiple projects that include signage, model building, rendering and color media presentations, indoor-outdoor site relationships, continuation of environmental studies, contextual issues, various architectonic scales, and analysis of product types with linkages to lighting design and building systems. Pr.: IAR 201.

IAR 303. Interior Architecture Design Studio IA. (6) I. This course integrates material from Environmental Design Studio I and II with ADS I, IAD I, LADS I. Twelve hours of studio a week. Pr.: For transfer students; 9 or more credit hours of graphics, design, and freehand drawing and admission to a department in the College of Architecture, Planning, and Design.

IAR 304. Interior Architecture Design Studio I Lecture. (1) I. Lecture component taken concurrently with IAR 301 Design Studio I. See IAR 301 for course description.

IAR 305. Interior Architecture Design Studio II Lecture. (1) II. Lecture component taken concurrently with IAR 302 Design Studio II. See IAR 302 for course description.

IAR 400. Product Design Studio I Lecture. (1) I, II. Lecture component taken concurrently with IAR 403 Product Design Studio I. See IAR 403 for course description.

IAR 403. Product Design Studio I. (3) I, II. Analysis, synthesis, and design of various types of products associated with the interior environment, integrating such human factor determinants as anthropometries and ergonomics. Construction of prototype products associated with the human environment developed concurrently within the design studio. Pr.: IAR 202; not more than one D in an interior architecture design studio course.

IAR 404. Interior Architecture Design Studio III. (4) I, II. This course will build upon and extend the knowledge and skill base gained by students in studios I and II. This course will include the introduction of programming methodology and its relationship to the design and organization of interior space. Emphasis will be placed on the appropriate selection of furniture, finishes, fixtures, and equipment within the context of their relationships to form, function, task, and users' needs. Pr.: IAR 202; not more than one D in an interior architecture design studio course.

IAR 405. Interior Architecture Design Studio III Lecture. (1) I, II. Lecture component taken concurrently with IAR 404 Design Studio III. See IAR 404 for course description.

IAR 406. Problems in Interior Architecture. (Var.) I, II. Study of specific interior architectural problems under direct supervision of a member of the department. Pr.: Approval of instructor.

IAR 407. Design Workshop I. (3) II. An introduction to shop procedures, equipment, design materials, joinery, and elementary design experiences in turning and shaping various materials. This course provides the student the opportunity through a series of small projects exposure to the total creative design process by researching, designing, constructing, and evaluating finished products. Pr.: Admission to the professional program of interior architecture.

IAR 409. Materials and Finishes. (2) I. Introduction to materials and finishes specific to interior applications. Criteria for evaluation, selection, and application of interior materials and finishes with the building fabric and their impact on building design. Preparation of written and graphic communications to illustrate and direct the construction process. Two hours lec. a week. Pr.: Admission to the professional program in interior architecture.

IAR 410. Interior Architecture Microcomputer Applications. (2) I. Instruction in microcomputer operating procedure, general terminology, programming concepts for microcomputer, and use of appropriate word-processing specification writing and computer-aided design software as it relates to the interior architecture profession. Four hours lab a week. Pr.: Enrollment in the interior architecture program.

IAR 411. Drawing in Black and White. (3) II. Freehand representational drawing of architectonic space using graphite pencil and ink pen. Emphasis is on the development of the visual perception of space and the communication of the perceived space through drawings that are clear and expressive. Pr.: Third-year standing.

IAR 413. Materials and Finishes Laboratory. (1) I. Identification and application of specific interior finishes. Two hours lab a week. Pr.: To be taken concurrently with IAR 409.

IAR 416. History of Furniture. (2) II. Analysis of the social, political, and religious influences on product and furniture design in Italy, France, and England from early renaissance through the 18th century. Pr.: Admission to the professional program in architecture, interior architecture, or landscape architecture.

IAR 420. Theory of Furniture Design. (2) I. Design theory related to analysis, materials, and construction techniques from the early American period through the contemporary movement. Pr.: Admission to the professional program in architecture, interior architecture, or landscape architecture.

IAR 430. Visual Communication. (2) I. Students will be challenged to visualize and communicate in a three-dimensional language using constructed perspective, computer generated perspective with rendering and animation techniques, and constructed models as tools of the profession. Rapid graphic visual techniques using various medias will be studied enabling quick exploration of multiple design options in a spatial environment. Graphic arts including photography, typesetting, silk screening and reproduction as applied to board presentations will be introduced. Throughout the entire semester the study of color theory and its application will be used in all presentations. Pr.: Admission to the professional program of interior architecture.

IAR 455. Product Design Illustration. (1) I, II. Exercises in various rendering techniques and involvement in different media presentations associated with product design. Pr.: IAR 420.

IAR 456. Theory of Product Design. (2) I. History and design theory related to analysis materials and construction in product design. Pr.: IAR 420

IAR 520. Design Graphics Workshop. (3) II. A course in the use of colored pencils to render and present form and space using different techniques. Emphasis on the visual perception and composition of elements in design drawings and presentation. Pr.: Sophomore standing.

IAR 600. Interior Architecture Design Studio IV Lecture. (1) I. Lecture component taken concurrently with IAR 602 Design Studio IV. See IAR 602 for course description.

IAR 602. Interior Architecture Design Studio IV. (4) I. This course is specifically directed towards the unique programming and design-related issues and conditions associated with contemporary large-scale office space planning. Emphasis is placed on the nature of the office work environment and the linking together of various architectural systems in support of users' needs. Students will be required to have their own personal computer for this course. Pr.: IAR 404 Studio III, and IAR 403 Product Design Studio I; not more than one D in an interior architecture design studio course.

IAR 606. Interior Architecture Design Studio V. (4) II. This semester of study provides an option for an interdisciplinary collaborative studio course oriented towards replicating the learning experience and interactive activities that takes place in the modern multidisciplinary professional office. Students enrolled in this studio can be from architecture, interior architecture, and landscape architecture. Pr.: IAR 602; not more than one D in an interior architecture design studio course.

IAR 607. Interior Architecture Design Studio V Lecture. (1) II. Lecture component taken concurrently with IAR 606 Design Studio V. See IAR 606 for course description.

IAR 608. Design Workshop II. (3) I. Design Workshop is intended to further develop the student's understanding of the three-dimensional design process through research, design, prototype construction, evaluation, and redesign. Enhance and increase the student's understanding of the structural characteristics of materials and increase their proficiency at communicating ideas through working and presentation drawings. Pr.: IAR 407

IAR 644. Interior Architecture Internship. (12) II, S. Thirty weeks off-campus work study in professional offices specializing in interior architecture: field and office experience. Pr.: IAR 603, ARCH 433, not more than one grade of D in an interior architecture design studio, and approval by the internship coordinator.

IAR 645. Interior Architecture Internship Report. (3) II, S. Taken in conjunction with IAR 644. The purpose is to develop the student's communication skills and awareness of the importance of written communication and record keeping in interior architectural office practice. The required report will provide a detailed documentation of the student's experiences encountered during internship. Pr.: Conc. enrollment in IAR 644.

IAR 646. Interior Architecture Foreign Studies. (12) II, S. This course allows the student to study outside of the United States for one semester. The semester will expand their global perspective of design professions and cultural, political, and economic views. One semester studying interior architecture in a foreign university. Pr.: IAR 603, ARCH 433, not more than one grade of D in an interior architecture design studio and approval by the foreign studies coordinator.

IAR 647. Interior Architecture Foreign Studies Reports. (3) II, S. Taken in conjunction with IAR 646. The purpose is to develop the student's written communication skills as well as increase awareness of written communication and record keeping in interior architecture office practice. The report will provide detailed documentation of the student's experiences during the foreign studies program. Pr.: Conc. enrollment in IAR 646.

IAR 705. Interior Architecture Design Studio VI. (4) I, II. This design studio pursues and extends the architectural knowledge gained in all previous studios. Emphasis is on understanding large-scale buildings in terms of structure, systems, materials, and environment. Design VI addresses the built environment, utilizing existing large-scale buildings to explore architectural renovation, rehabilitation, restoration, and preservation. Pr.: IAR 606, or IAR 644 and IAR 645, or IAR 646 and IAR 647; not more than one D in an interior architecture design studio course.

IAR 706. Product Design Studio II. (4) I, II. Advanced design projects involving products related to the interior environment. Synthesis of the design, materials, construction, and finishing of prototype products relevant to human use. Pr.: IAR 605 or IAR 644 and IAR 645, or IAR 646 and IAR 647; not more than one D in an interior architecture design studio course.

IAR 707. Product Design Studio II Lecture. (1) I, II. Lecture component taken concurrently with IAR 706 Product Design Studio II. See IAR 706 for course description.

IAR 708. Interior Architecture Design Studio VI Lecture. (1) I, II. Lecture component taken concurrently with IAR 705 Design Studio VI. See IAR 705 for course description.

IAR 714. Furniture Design Workshop. (3) I, II, S. Design, construction, and finishing of contemporary furniture and accessories. Pr.: IAR 608.

IAR 720. Advanced Seminar in Interior Architecture. (1–3) I, II. Advanced readings and discussions of environmental issues related to the practice of interior architecture. Readings, discussions, reports. Pr.: IAR 702 or equiv.

IAR 730. Facility Management. (2) II. A survey of the methods of managing the physical assets of large facilities—corporate, institutional, and governmental—through a review of current literature, presentations by professionals active in the field, and case studies.

IAR 740. Advanced Design Workshop. (1–4) I, II. Advanced instruction in the design, construction, and finishing of contemporary furniture and accessories. The course involves the development of a concept for a complex furniture prototype and includes research, program development, design development, criteria examination and determination, design development, working drawings, complete prototype development, and presentation drawings. Pr.: IAR 714 or equivalent.

IAR 753. Professional Practice. (3) I. Studies of conventional and newly developing modes of professional design practice. Presented are the relationships of interior architects, architects, and landscape architects and other design professionals to users, clients, building industry, society, government, and one another. Pr.: Fifth-year standing.

IAR 760. Interior Architecture Seminar. (3) I, II. Readings and discussion of contemporary thought and movements within the field of interior architecture with special emphasis on the societal factors which produce and affect change. Pr.: IAR 705 or graduate standing.

Landscape Architecture and Regional and Community Planning

Dan Donelin,* Head

Alton A. Barnes, Jr.,* Associate Head/Graduate Director, Landscape Architecture

C. A. Keithley,* Associate Head/Graduate Director, Regional and Community Planning

Professors Barnes,* Brooks,* Day,* Donelin,* Forsyth,* Keithley,* Keller,* Law,* Marshall,* Page,* Weisenburger,* and Winslow;* Associate Professors Chelz, Clement,* Ewanow,* Keane,* Mattson,* Rolley,* and Schrader;* Assistant Professor Wigfall;* Adjunct Professors McGraw,* Seamon,* D. Watts;* Emeriti Professors Deines* Ealy,* and Foerster.*

Landscape architecture

The curriculum leading to the professional bachelor of landscape architecture degree is designed to prepare students for a variety of career opportunities found within the profession. Special emphasis is placed on site analysis, land planning, arrangement and organization of facilities on the land, organization of outdoor spaces, topographical manipulation and other aspects of site construction, and the use of plants in the landscape. Study of human impact on the natural and built environment and methods of minimizing negative aspects of this relationship are emphasized.

The bachelor of landscape architecture degree is accredited by the Landscape Architectural Accreditation Board of the American Society of Landscape Architects.

The bachelor of landscape architecture program consists of a four-year course of study following the one-year environmental design studies program. All required courses taught in the landscape architecture program that are counted toward the degree must be passed with a grade of C or better.

The Department of Landscape Architecture and Regional and Community Planning, in order to prepare students for their professional responsibilities and leadership roles, requires that all students provide or have access to a computer and appropriate software to support their course of study. The department will provide information about appropriate hardware and software.

Landscape architecture

180 LAR

Total hours required for graduation 161

For the curriculum requirements for the first two semesters, see Environmental Design Studies earlier in this section.

Third semester

LAR 220	Landscape Architecture Design Studio I	4
LAR 248	Building Science	3
LAR 310	Design Graphics and Visual Thinking	3
BIOL 210	General Botany	4
HORT 374	Woody Plant Materials***	3
		17

Fourth semester

LAR 320	Landscape Architecture Design Studio II	4
LAR 322	Environmental Issues and Ethics	3
CE 212	Elementary Surveying Engineering**	3
ENGL 200	Expository Writing II	3
HORT 375	Woody Plant Materials II***	3
		16

Fifth semester

LAR 410	Landscape Architecture Design Studio III	4
LAR 420	Natural Systems and Site Analysis	4
LAR 433	History of Landscape Architecture	3
LAR 438	Land Construction I	4
University general education or professional elective		2
		17

Sixth semester

LAR 439	Land Construction II	4
LAR 442	Landscape Architecture Design Studio IV	4
LAR 444	Internship/Advanced Studies Planning Seminar****	1
LAR 460	Computer Applications in Landscape Architecture *	3
University general education or professional elective (business)		3
		15

Seventh semester

LAR 646	Landscape Architecture Design Studio V	4
LAR 647	Land Construction III	4
ENGL 516	Written Communication for the Sciences	3
PLAN 315	Introduction to Planning	3
University general education or professional elective (architecture)		3
		17

Eighth semester

LAR 648	Landscape Architecture Design Studio VI	4
LAR 744	Community Site Planning	4
University general education or professional elective (social science/humanities)		3
University general education or professional elective (business)		3
University general education or professional elective		3
		17

Ninth semester

LAR 501	Landscape Architecture Seminar I	2
LAR 645	Professional Internship	1
LAR 703	Landscape Architecture Design Studio VII	5
University general education or professional elective		3
University general education or professional elective (social science/humanities)		3
		14

Tenth semester

LAR 502	Landscape Architecture Seminar II	2
LAR 704	Landscape Architecture Design Studio VIII	5
LAR 745	Professional Practice	3
University general education or professional elective		2
University general education or professional elective (science)		4
		16

University general education and professional electives
Of 32 elective credit hours, 18 are general education—as required by the university—and 14 credits are professional electives, to fulfill curriculum requirements.

Of the 32 elective credits, the curriculum maintains 19 directed elective credits to include 6 credit hours in business, 6 credit hours in social science/humanities, 4 credit hours in science, and 3 credit hours in architecture.

Directed electives may be taken as university general education or professional support electives.

A listing of both university general education and professional electives can be found in the *Bachelor of Landscape Architecture Handbook*. A copy of the handbook may be purchased at the Engineering Copy Center, ground floor, Seaton Hall.

*It is expected that all students, prior to participating in LAR 460 Computer Applications in Landscape Architecture, will have successfully completed a computer class emphasizing word processing and/or computer graphics.

**Surveying is taught in civil engineering; MATH 150 Plane Trigonometry, or equivalent, is a prerequisite.

***Woody Plant Materials is taught in horticulture and the prerequisite is one of these two courses: BIOL 210 General Botany; or BIOL 198 Principles of Biology for transfer students.

****Internship in a professional office is arranged by the student for the summer and credited in the next fall semester.

The curriculum is subject to regular review and revision. Students are advised to obtain a copy of the current curriculum when they are admitted to the program. All required courses taught in LA/RCP must be passed with a grade of C or better.

Planning certificate for undergraduates

The regional and community planning program offers course work in support of other university programs dealing with the professional practice of planning and in preparation for entry into a graduate program in planning either at K-State or other universities.

Planning encompasses a body of knowledge that has been partially derived from social science theory and embodies awareness or understanding of the physical planning elements of the community and region, as well as the environmental, ecological, socioeconomic, and political systems at work in society.

In preparation for possible graduate study in planning, and to provide a different perspective of the community in which individuals and groups work, live, and play, the department offers an undergraduate certificate in planning, which requires students seeking the equivalent to a minor in planning to integrate a minimum of 15 credit hours of planning courses in their undergraduate degree program. The requirements include the following:

Required

PLAN 315	Introduction to Planning	3

Elective
12 credit hours of planning course work below the PLAN 800 level offered from the department, in which the student meets the prerequisites. Suggested courses depend on student interest and degree orientation. Advising is available from the RCP program faculty.

Options
Several other departments offer courses directed to elements of planning concerns. Upon petition by the undergraduate student enrolled in the certificate program and evaluation by program faculty, substitution of up to one 3-credit-hour course as an accepted elective may be possible. Courses that have been approved for substitution include, but are not limited to, the following:

LAR 652	Small Communities in the Plains States
LAR 720	Public Lands and National Resources Law
LAR 744	Community Site Planning
LAR 758	Land Resource Information Systems
LAR 759	Land Resource Evaluation
CE 570	Transportation Planning
GEOG 505	Fundamentals of Geographic Information Systems
GEOG 705	Geographic Information Systems

Enrollment in the planning certificate program is accomplished by contacting the director of regional and community planning program in Seaton 301D. Upon graduation, students completing the program receive a planning certificate denoting completion of the requirements.

Students interested in pursuing graduate study in planning are encouraged to complete an undergraduate-level statistics course in their program of study leading to a bachelor's degree. This requirement is a prerequisite for entry into all graduate planning programs in the United States. Knowledge in the use of microcomputers and basic software programs for word processing, spreadsheet, and database applications is indispensable.

While there are many routes to graduate study in planning, students are encouraged to consider following a pre-planning program, such as that offered in the Department of Geography. Students may also seek advising or counsel from faculty in the Department of Landscape Architecture and Regional and Community Planning as to which electives in the various departments will provide better planning-oriented information for later use. Courses which satisfy that orientation at the undergraduate level include the following:

College of Architecture and Design		
Architecture:		
ARCH 601	Topics: History of Designed Environment	3
Regional and community planning:		
PLAN 315	Introduction to Planning	3
PLAN 590	Problems: Shaping the American City	3
College of Arts and Sciences		
Computing and information science:		
CIS 101	Introduction to Information Technology	1
CIS 102	Introduction to PC/Spreadsheet	1
CIS 103	Introduction to PC/Database	1
CIS 104	Introduction to PC/Word Processing	1
Economics:		
ECON 532	Fiscal Operation of State and Local Government	3
ECON 633	Public Finance	3
ECON 555	Urban and Regional Economics	3
Geography:		
GEOG 200	Human Geography	3
GEOG 220	Environmental Geography	3
GEOG 440	Geography of Natural Resources	3
GEOG 450	Geography of Economic Behavior	3
GEOG 460	Geography of Future Worlds	3
Political science:		
POLSC 377	Introduction to Public Policy	3
POLSC 507	Introduction to Public Administration	3
POLSC 618	Urban Politics	3
Sociology:		
SOCIO 432	Community Organization and Leadership	3
SOCIO 530	Population and Human Ecology	3
SOCIO 531	Urban Sociology	3
SOCIO 533	Rural Society	3
SOCIO 535	Population Dynamics	3
Statistics:		
STAT 330	Elementary Statistics for Social Sciences	3
College of Business Administration		
Finance:		
FINAN 552	Real Estate	3
College of Human Ecology		
Clothing, textiles and interior design:		
FEC 420	Housing	3
FEC 625	Consumer and Energy Issues in Housing	3

Courses listed above the 500 level (with the exception of those listed in the program of regional and community planning) can be taken for graduate credit and applied towards a graduate degree in planning, per university guidelines, if not needed in the undergraduate degree program of study. Several additional courses could be listed at the 700 level from across the campus. For more information, see the graduate catalog or visit the departmental office.

Landscape architecture courses

LAR 220 and LAR 320. Landscape Architectural Design Studio I and II. An introduction to the principles, elements, and materials of landscape architecture. Design procedure, methodology and process are explored with a variety of project types emphasizing exterior spatial development as it relates to human behavior.

LAR 220. Landscape Architectural Design Studio I. (4) I. Two hours lecture and six hours design studio a week. Pr.: Admission to the professional program and ENVD 201, 202.

LAR 248. Building Science. (3) I. Instruction in the materials of building and landscape design; sources, characteristics, and uses in design and construction; emphasis on evaluation and selection. Two lectures and one recitation per week. Pr.: Second-year standing and PHYS 113.

LAR 310. Design Graphics and Visual Thinking. (3) I. A study of graphic communication techniques for the exploration and presentation of landscape architecture design ideas. One hour lec. and four hours studio a week. Pr.: ENVD 202.

LAR 320. Landscape Architectural Design Studio II. (4) II. Two hours lec. and six hours design studio a week. Pr.: LAR 220.

◆LAR 322. Environmental Issues and Ethics. (3) II. An introduction to the relationship of the natural environment to the life within it and as a factor in environmental design ethic. Three hours lec. a week.

LAR 410. Landscape Architecture Design Studio III. (4) I. Principles and concepts of site planning and programming with special emphasis on recreation facility planning and design. Two hours lec. and six hours studio a week. Pr.: LAR 320.

LAR 420. Natural Systems and Site Analysis. (4) I. Emphasis on ecological issues in design, natural systems, and site analysis in planting design. Two hours lec. and six hours studio a week. Pr.: Third-year standing in the university.

LAR 433. History and Theory of Landscape Architecture. (3) I. The influences of social, political, economic, and climatic factors on historic landscape styles; theory of landscape design. Three hours rec. a week. Pr.: First-year classification in professional LAR program.

LAR 438. Land Construction I. (4) I. Problems in the basic aspects of land construction to include topography, site design, site grading, earthwork estimating, and site layout. Three hours lec. and five hours studio a week. Pr.: LAR 248, 320, CE 212.

LAR 439. Land Construction II. (4) II. Continuation of LAR 438. To include landscape irrigation, area and landscape lighting, construction detailing, construction specification writing, bid proposals, and cost estimating. Three hours lec. and five hours studio a week. Pr.: LAR 438.

LAR 440. Problems in Landscape Design. (Var.) I, II, S. Assigned problems and reports in landscape architecture. Pr.: Junior standing.

LAR 442. Landscape Architecture Design Studio IV. (4) I, II. Design studies emphasizing functional, aesthetic and ecological uses of plants. Relationship between plants and the built environment; preparation of planting plans and their use as working drawings; elements and principles of planting design; specification writing; contractor relationships; and design implementation. Two hours lec. and six hours of studio a week. Pr.: LAR 410, 420, 438.

LAR 444. Internship/Advanced Studies Planning Seminar. (1) II. Review of the nature and scope of professional internships and opportunities for specialized professional study. Pr.: LAR 410.

LAR 450. General Landscape Design. (3) I, II. Basic graphic communication skills, design principles, and design vocabulary covering residential and small scale landscape development plans. Two hours lec. and two hours studio a week. A general service course for majors outside the College of Architecture, Planning, and Design.

LAR 460. Computer Applications in Landscape Architecture I. (3) II. Introduction of uses of computers in typical landscape architectural practice; function, operation characteristics, and applications of computer software and hardware. Two hours lec. and two hours lab a week. It is expected that all students prior to participating in LAR 460 will have completed a computer class, emphasizing fundamentals of computer applications.

LAR 500. Site Planning and Design. (3) II. Theory, principles, and elements of site planning and design. Lectures, readings, short problems, and site visits dealing with site analysis, ecological consideration, grading, drainage, circulation and parking, lighting, planting design, materials and details, management and maintenance, and cost factors. Pr.: ARCH 401 or conc. with ARCH 401.

LAR 501. Landscape Architecture Seminar I. (2) I. Required of all fifth-year landscape architecture majors. Discussion of current trends in landscape architecture and related fields by students, faculty, and invited speakers.

LAR 502. Landscape Architecture Seminar II. (2) II. Required of all fifth-year landscape architecture majors. Discussion of current trends in landscape architecture and related fields by students, faculty, and invited speakers.

LAR 635. Golf Course Planning and Design. (1–4) I, II, S. Fundamentals of golf course planning and design, including history, management, design, facilities, aesthetics, and technical development. One hour lec. and three hours lab a week. Pr.: Junior standing within landscape architecture.

LAR 645. Professional Internship. (Var.) I, II, S. Confirmed employment in a professional physical planning office, subject to the approval of the departmental faculty, for a period of eight weeks, documented by the employer and written and oral reports by the students. Pr.: LAR 444.

LAR 646 and LAR 648. Landscape Architectural Design Studio V and VI. Design of the outdoor environment for human needs and activities; ecological considerations; project program, site selection, analysis concept, design communication, specification, construction, planting, and maintenance.

LAR 646. Landscape Architectural Design Studio V. (4) I. Twelve hours design studio a week. Pr.: LAR 442, LAR 438, and LAR 439.

LAR 648. Landscape Architectural Design Studio VI. (4) I. Twelve hours design studio a week. Pr.: LAR 646, 647.

LAR 647. Land Construction III. (4) I. Continuation of LAR 439 to include large-scale site design, road alignment, large-area grading, soils and excavation methods, storm drainage, and utilities routing. Three hours lec. and five hours studio a week. Pr.: LAR 439.

LAR 652. The Small Community in the Plains States. (3) I, II, S. An overview of the diverse nature of small communities in the Plains states, with an emphasis on the forms and patterns in the existing physical environment. Instruction in various methods of survey and analysis at the regional and community-specific scales, and application of these techniques to a different community each semester. Pr.: Fourth-year standing.

LAR 660. Landscape Rehabilitation of Disturbed Lands. (3) I. Planning rehabilitation of lands disturbed by mining and construction. Review of mining procedures, ecological systems, slope rehabilitation, and revegetation techniques. Three hours lec. a week. Pr.: Junior standing.

LAR 703 and LAR 704. Landscape Architectural Design Studio VII and VIII. Design of the outdoor environment for human needs and activities; ecological considerations; project program, site selection, analysis, concept, design, communication, specification, construction, planting, and maintenance.

LAR 703. Landscape Architectural Design Studio VII. (5) I. Fifteen hours design studio a week. Pr.: LAR 648, 647.

LAR 704. Landscape Architectural Design Studio VIII. (5) II. Capstone project. Individual studies approved by departmental faculty. Fifteen hours design studio a week. Pr.: LAR 703 and LAR 647.

LAR 709. Computer Applications in Landscape Architecture. (3) II. Introduction to computer-aided design and related applications. Basic two- and three-dimensional problem-solving design visualization and communication. Using word processing and spread sheets in the CAD environment. One hour of the lec. and three hours of lab per week. Pr.: Operational knowledge of DOS and Windows-based systems is expected.

LAR 710. Microcomputer Applications in Landscape Architecture II. (3) II. Examination of the application of microcomputer technology in the decision-making processes in the advanced practice and research of landscape architecture. Two hours lec. and two hours lab a week. Pr.: LAR 460.

◆LAR 720. Public Lands and Natural Resources Law. (3) I, II. Legal aspects of land use and natural resource management on the federal public lands. A brief history of the acquisition and disposition of the public domain and a review of legal authority on the public lands are followed by an examination of key legal issues concerning the resources of water, minerals, timber, range, wildlife, recreation, and wilderness. Pr.: Advanced standing.

LAR 735. Advanced Golf Course Planning and Design. (1–4) I, II, S. Special studies in methods and strategies of golf course planning and design. May be repeated for credit. Pr.: LAR 635.

LAR 741. Problems in Landscape Architecture. (Var.) I, II, S. Specific problems and/or reports in the area of landscape architecture. Pr.: Advanced undergraduate or graduate standing.

LAR 744. Community Site Planning. (4) II. Growth and development of cities and towns; land subdivision. Two hours lec. and six hours studio a week. Pr.: PLAN 315 or consent of instructor.

LAR 746. Urban Design Studio I. (4) I. An interdisciplinary design studio involving large-scale design; projects with extensive time implementation sequence; responses to socioeconomic, cultural, environmental, and technical needs; and implementation strategies. Design methods are applied to selected urban areas of the Midwest. Pr.: PLAN 315 or equiv.; and conc. enrollment in PLAN 745.

LAR 747. Urban Design Studio II. (4) II. Continuation of LAR 746. Pr.: LAR 746 and conc. enrollment in PLAN 845.

LAR 753. Professional Practice. (3) II. Studies of conventional and newly developing methods of professional design practice. Instruction in the relationships of architects, landscape architects, interior architects, and other professional to users, clients, construction industry, society, government, and one another. Two hours lec. and one hour rec. Pr.: Fifth-year standing.

LAR 756. Design of Parks and Recreation Areas. (3) I. Site planning of national, state, municipal, and private parks, and specialized recreation areas. Three hours lec. a week. Pr.: Junior standing.

LAR 757. Design for Special Populations. (3) II. Design of exterior environments to accommodate the handicapped and disadvantaged individual. Pr.: Advanced undergraduate or graduate standing.

LAR 758. Land Resource Information Systems. (3) I. The understanding, collection, and application of land resource data to land planning and design. Current methods of resource inventory, ecologically oriented site analysis, and environmental impact assessment. Review of common sources for necessary information in each resource category. Two hours lec. and two hours studio a week. Pr.: Advanced undergraduate or graduate standing.

LAR 759. Landscape Resource Evaluation. (3) II. The determination of the impact of physical landscape project design upon the natural and man-made environment. Studies of existing site conditions and projections of the effect of such projects upon the site and vicinity. Pr.: Senior or graduate standing.

Regional and community planning courses

PLAN 315. Introduction to Planning. (3) I. The origins and evolution of planning in response to economic, social, political, and physical problems. The planning process and its relationship to the design professions and the social and behavioral sciences. Three hours recitation a week. Pr.: Sophomore standing.

Undergraduate and graduate credit

PLAN 590. Problems in Planning. (1–3) I, II, S. Specific planning problems, including process, theory, method and implementation, under direction of department staff. Pr.: PLAN 315.

PLAN 630. Computer Applications in Planning and Design. (1–3) I, II, S. The application of computer concepts to problem solving and data analysis in the planning and design professions, including the development of user skills in the application of various software packages for data analysis, mapping, and computer-assisted design. Pr.: CIS 110 and junior standing.

PLAN 700. Planning Analysis. (3) I, II. Introduction to quantitative methods in planning to measure change in the socio-economic-political-physical environment and to analyze the interrelations that guide formulation of comprehensive planning. Pr.: PLAN 315 and ECON 555.

PLAN 705. Planning Communications. (1–4) I. Study and application of communication concepts and media utilized in regional and community planning, topics to be selected from: (a) graphics, (b) physical models, (c) professional reports, and (d) public hearings. Pr.: Senior status and PLAN 315.

PLAN 710. Urban Visual Analysis. (3) II. Survey and analysis of urban form and space in relation to aesthetic theories and values. Methods of visual perception and analysis are reviewed and applied to contemporary urban form and space. Pr.: PLAN 745

PLAN 715. Planning Principles. (3) I, S. Examination of principles and elements of regional and community planning, including growth forms, physical patterns, planning stages, standards, control measures, and procedures. Pr.: Senior standing and approval of instructor.

PLAN 721. Infrastructure Planning and Finance. (3) II. Examination of infrastructure systems, standards, and costs; consideration of policy options and strategies; review of infrastructure finance methods; and implementation of community development with infrastructure planning and finance process. Pr.: PLAN 715 and 9 additional credit hours in planning and/or administration courses.

PLAN 725. Planning Theory. (3) I. Review of basic theories of regional and community growth and change; analysis of the process of urbanization in relation to societal determinants and environmental constraints; and the synthesis of a process of planning. Pr.: Senior standing and approval of instructor.

PLAN 735. Community Plan Preparation. (3) II. Review of the principles and elements of city growth and change. Criteria and methodology for city analysis and planning are examined and applied to the elements of cities. Pr. or conc.: PLAN 715 or 725

PLAN 736. Community Plan Implementation. (Var.) I. Introduction to legislation and interpretation of codes related to planning, design, and construction. Pr. PLAN 715.

PLAN 740. Small Community and Rural Area Planning. (3) II. Synthesis of small community and rural area change, including socio-economic-political determinants as bases for community design and planning. Pr.: PLAN 315 plus 9 credit hours in economics, political science, and sociology.

PLAN 745. Urban Design. (3) I, II. Review of recent historical developments of urban form and space. Criteria and methodology for urban design and planning are examined and applied to the elements of cities. Pr. or conc.: PLAN 315 or graduate status.

PLAN 746. Urban Design Studio I. (4) I. An interdisciplinary design studio involving large-scale design; projects with extensive time implementation sequence; responses to socio-economic, cultural, environmental, and technical needs; and implementation strategies. Design methods are applied to selected urban areas of the Midwest. Pr.: PLAN 315 and conc. enrollment in PLAN 745.

PLAN 750. Housing Policies and Programs. (3) II. Review and evaluation of historical and current housing issues, production, and financial systems. Examination of federal, state, and local policies and programs for community development. Pr.: PLAN 315.

PLAN 755. State and Regional Planning. (3) I. Review of the principles and elements of regional growth and change. Criteria and methodology for regional analysis and planning are examined and applied to the elements of regions. Pr.: PLAN 715 or conc. enrollment.

PLAN 760. Community Development Planning. (3) II. Examination of past and present approaches to community development planning in the United States. Review and assessment of community development planning policies, programs, and practices. Pr.: PLAN 715 or conc. enrollment, and 9 semester hours in the social sciences.

PLAN 761. Community Development Workshop. (Var.) I, II, S. The organization, planning, design, development, and evaluation of community development projects, with real clients and actual locations. Pr.: PLAN 715 and PLAN 760; or conc. enrollment.

PLAN 770. Planning Law. (3) I. Examination of evolution and current state of land use regulation within constitutional limits. Introduction to zoning, subdivision, and other police power controls within a comprehensive planning process. Pr.: PLAN 715.

PLAN 780. Planning in Developing Areas. (3) I, II. Examination of comparative regional and community systems of development, consideration of alternative approaches to planning, with emphasis on developing countries and underdeveloped areas in the rural United States. Pr.: PLAN 715 plus 9 credit hours from the social sciences.

Arts and Sciences

Peter J. Nicholls, Dean
Stephen E. White, Associate Dean
Virginia Sylvester, Assistant Dean

117 Eisenhower Hall
785-532-6900

The College of Arts and Sciences is the home of the liberal arts and is the largest college at K-State. The liberal arts, which include the physical and biological sciences, the fine arts, the social sciences, the humanities, and the quantitative disciplines, embody the core studies of a university education.

The liberal arts seek to develop intellectual skills, such as critical analysis, self-expression, and creativity. Majors in the College of Arts and Sciences range from those related to specific jobs and professions to those related to vocation in a more general and perhaps more fundamental way.

Majors and Degrees

The undergraduate degrees offered in the College of Arts and Sciences are: bachelor of arts, bachelor of fine arts, bachelor of music, bachelor of music education, and bachelor of science. In addition, the associate of arts and the associate of science degrees with unspecified majors are offered at Fort Riley.

Below in the left column are majors, options, advising programs, and degrees offered. In the right column are names of the departments under which the major programs are offered. The specific requirements for a degree in the various curricula may be found in the department listings later in the College of Arts and Sciences catalog section.

Programs	**Departmental office**
Anthropology, B.A. or B.S.	Sociology, Anthropology, and Social Work
Applied anthropology	
Art, B.A. or B.F.A.	Art
Biochemistry, B.A. or B.S.	Biochemistry
Biology, B.A. or B.S.	Biology
Chemical science, B.A. or B.S.	Chemistry
Chemistry, B.A. or B.S.	Chemistry
Economics, B.A. or B.S.	Economics
English, B.A	English
Creative writing	
Literature	
Teaching certification	
Fisheries and wildlife biology, B.A. or B.S.	Biology
Fisheries biology	
Wildlife biology	
Natural history	
Geography, B.A. or B.S.	Geography
General	
Pre-planning	
Geology, B.A. or B.S.	Geology
History, B.A. or B.S.	History
Interdisciplinary	Dean's office
Humanities, B.A.	
Life science, B.A. or B.S.	
Physical science, B.A. or B.S.	
Social science, B.A. or B.S.	
Mass communications, B.A. or B.S.	Journalism and Mass Communications
Advertising	
Electronic journalism	
Print	
Public relations	
Radio–Television	
Kinesiology, B.A. or B.S.	Kinesiology
Nutrition and Exercise Science	
Mathematics, B.A. or B.S.	Mathematics
Medical technology, B.A. or B.S.	Dean's office
Microbiology, B.A. or B.S.	Biology
Modern languages, B.A.	Modern languages
Music, B.A. or B.M.	Music
Music education, B.M.E.	Music
Philosophy	Philosophy
Interdisciplinary, B.A. or B.S.	
Pre-business, B.A. or B.S.	
Pre-law, B.A. or B.S.	
Pre-ministry, B.A.	
Traditional, B.A.	
Physics, B.A. or B.S.	Physics
Political science, B.A. or B.S.	Political science
Pre-dentistry, B.A. or B.S.	Dean's office
Pre-health information management (advising program)	Dean's office
Pre-law (advising program)	Dean's office
Pre-medicine, B.A. or B.S.	Dean's office
Pre-nursing (advising program)	Dean's office
Pre-occupational therapy (advising program)	Dean's office
Pre-optometry (advising program)	Dean's office
Pre-pharmacy (advising program)	Dean's office
Pre-physical therapy (advising program)	Dean's office
Pre-respiratory therapy (advising program)	Dean's office
Pre-veterinary medicine* (advising program)	Dean's office
Psychology, B.A. or B.S.	Psychology
Social work, B.A. or B.S.	Sociology, Anthropology, and Social Work
Sociology, B.A. or B.S.	Sociology, Anthropology, and Social Work
General	
Criminology	ASW–Capital
Speech, B.A. or B.S.	Speech, Communication, Theatre, and Dance
General	
Linguistics	
Statistics, B.A. or B.S.	Statistics
Theatre, B.A. or B.S.	Speech, Communication Theatre, and Dance
Dance	

*Students who complete pre-veterinary medicine requirements in the College of Arts and Sciences will be eligible for the bachelor of science degree from the College of Arts and Sciences upon completion of the second professional year in the College of Veterinary Medicine.

Secondary majors
Secondary majors are majors that can be taken only in addition to the primary majors listed above. The secondary majors in the college are: American ethnic studies, gerontological studies, industrial labor relations, international studies, Latin American studies, and women's studies.

Minors
Contact the appropriate department on these minors: American ethnic studies, chemistry, dance, economics, English, French, German, history, music, philosophy, political science, rhetoric/communication, Russian, Spanish, and theatre.

Degree Requirements

120 credit hours required for graduation.

Courses numbered below 100 may not be applied toward a degree. In addition to the university's limit on credits for extracurricular work, no more than 4 credit hours in lifetime sports and exercise activity classes may be applied toward a degree.

Common degree requirements

(Three courses, 8 credit hours minimum)
Purpose: to give students practice in writing and analyzing expository and argumentative prose and in oral presentation.

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3

University general education requirements

University
Kansas State University has established requirements for a university general education program. See "University General Education Requirements" in the Degrees section of this catalog.

College
As required by the university, students must complete at least 18 credit hours of approved university general education courses, at least 6 credit hours of which must be at the 300 level or above. The college further requires that at least one university general education course must be taken from each of the three areas of humanities, social sciences, and computational or natural sciences. Transfer students requiring only 6 hours of university general education courses should take at least one course from each of two discipline areas.

Courses used for university's general education credit may not be in the student's major field without the approval of the college and the university.

Within the above guidelines, any approved general education courses offered by any college at Kansas State University may be used to satisfy these requirements. University general education courses approved as basic requirements in the College of Arts and Sciences (see "Bachelor of Arts and Bachelor of Sciences" following this section) may be used to satisfy simultaneously both university general education and College of Arts and Sciences basic requirements. Courses from other colleges may be approved as basic requirements in the College of Arts and Sciences. Students should consult their advisors for up-to-date lists of approved courses.

Departmental
Individual departments within the college may propose exceptions or additions to the college requirements noted above. Students are advised to check with their major departments to see whether such is the case.

In course descriptions, university general education courses are marked with a ◆. The Degrees section at the front of this catalog lists other university general education courses. A list of currently offered university general education courses is available on the web at these addresses:
- http://www.ksu.edu/course/
- http://www.ksu.edu.educadv/

A major
Purpose: to ensure some depth and detail in at least one field of knowledge.

Satisfaction of requirements for any of the majors in the College of Arts and Sciences (see list earlier in this section). With careful scheduling, it is possible to complete an additional major, a secondary major, a minor, or pre-professional requirements, as well.

Bachelor of Arts and Bachelor of Sciences

College of Arts and Sciences basic requirements

Basic requirements are to be fulfilled with courses chosen by students in consultation with their advisors. The aim of these requirements is to provide breadth in the major areas of knowledge outside of the field of specialization. Introductory and intermediate-level courses are available for this purpose in departments in natural sciences, social sciences, and humanities.

The aim of the requirement in the humanities is to encourage and to enable students to recover "a heritage so important that to lose it would be to lose the very qualities that make men and women greater than the systems they devise and mark the difference between a society of robots and a community of civilized human beings." The aim of the requirement in the sciences is to ensure that students gain an immediate acquaintance with the general principles of scientific method and with the different shapes the scientific enterprise takes in the physical sciences, the life sciences and the social sciences.

Up to two courses from one department may be used to fulfill the distribution requirements for humanities and the social sciences. They may be used at the same time to count towards the student's major. No course may be used to satisfy more than one specific requirement for humanities and social sciences. Only courses taken for 2 or more credit hours satisfy these requirements; courses in excess of 5 credit hours count as two courses.

Humanities

Four courses, one course each section, 11 credit hours minimum

Fine arts (one course, or at least two credits)
Purpose: to ensure some interpretive or expressive competence in a traditional nonliterary mode of artistic expression.

Choose from the following:
DAS 100, 110
Anthropology—ANTH 515, 516, or 517
Art—ART 301, 305, 400, or 560
Art history—any course
Art technique—ART 200 to 799
Dance—DANCE 205, 323, 324, 325, 326, 371, 399, 459, or 520
History—HIST 459
Music—MUSIC 100, 160, 200, 201, 245, 250, 255, 280, 310, 385, 420, 424, 455, 480, 570, 601, or 650.
Theatre—THTRE 260 to 799

Philosophy (one course)
Purpose: to ensure some interpretive or expressive competence in the fundamental conceptual issues of human thought and activity.

Choose any philosophy course except PHILO 110, 220, or 510.

Western heritage (one course)
Purpose: to ensure some interpretive or expressive competence regarding the institutions, traditions, and values that have shaped Western civilization.

Choose from the following:
American ethnic studies—AMETH 160, 501, or 560
Constitutional law—POLSC 613, 614, 615, 616, or 799
Foreign civilizations—FREN 514, GRMN 530, SPAN 565, or SPAN 566
History—courses dealing with the Greco-Roman, Western European, or North American experience; HIST 515 History of Sport
Kinesiology—KIN 515 (crosslisted with HIST 515), 325
Music—MUSIC 245
Political thought—POLSC 301, 661, 663, 667, 671, 675, or (SOCIO) 709
Sociology—507
Speech—SPCH 460
Western humanities—ENGL 230, 231, 233, or 234
Women's studies—WOMST 105, 405, 500, or 506 or 510

Literary or rhetorical arts (one course)
Purpose: to ensure some interpretive or expressive competence in a traditional literary or rhetorical mode of artistic expression.

Choose from the following:
English—literature or creative writing—ENGL 250 to 799 except 300, 400, 415, 420, 430, 476, 490, 492, 499, 516, 604, 759, or 790
Modern languages—literature courses including literature in translation
Speech: SPCH 325, 480
Theatre—THTRE 562 or 764
History of rhetoric—SPCH 330, 331, 430, 432, 434, 460, 725, 730, 732, or 733

Exception: Students in B.S. programs who take two courses in one foreign language may use these to satisfy the requirements for Western heritage and for literary and rhetorical arts.

Social sciences

Four courses, 12 credit hours minimum, from three disciplines

Purpose: to acquaint students with the adaptation of scientific method to the analysis of human social systems.

One course must be at 500 level or above, or carry a prerequisite in the same department.

Three of the four courses must be from these areas:
Cultural anthropology—including archaeology
Economics—any course
Geography—except GEOG 220 or 221 or 350
History—any course
Political science—any course
Psychology—any course
Mass communications—MC 235, 300, 305, 530, 565, 595, 612, 700, 710, 715, 720, or 725
Sociology—any course

The fourth course must be from the above areas or from:
American ethnic studies—AMETH 501
Anthropology—ANTH 520, 532, or 640
Gerontology—GERON 315 or 600 or 615
Kinesiology—KIN 320, 340, 345, or 435
Linguistics—except LG 601
Speech—SPCH 323, 435, 720, or 726
Women's studies—WOMST 105, 405, 500, or 506 or 510

Natural sciences

Three courses, 11 credit hours minimum

Life sciences (one course with laboratory)
Purpose: to introduce students to the systematic study of organisms and their interrelationships.

Choose from the following:
Biology—any course
Biochemistry—any course
Paleobiology—GEOL 581 or 704
Physical anthropology—ANTH 280, 281, 680, 688, 691, 694, or 695

Physical sciences (one course with laboratory)
Purpose: to introduce students to the appropriate attitudes and methods that characterize the systematic study of matter and energy.

Choose from the following:
Chemistry—any course
Environmental geography—GEOG 220 or 221 or 350
Geology—any course except GEOL 581 or 704
Physics—any course

One additional natural science course selected from life sciences or physical sciences lists above.

International studies overlay

One course

Purpose: to equip students better to become citizens of a world where the most important problems are unavoidably defined in international terms and to understand cultures of the world outside the Western tradition.

A student must take one course of which at least half is devoted to: economic, political, and social relations or interactions between or among different countries, in which the major focus is upon the interdependency of nations of the modern world; or contemporary features or historical traditions of non-Western cultures (excluding those dealing primarily with Greek, Roman, Western European, or North American experience).

Students may satisfy the international studies requirement at the same time they satisfy requirements in the major, in the humanities, or the social sciences. These courses qualify:

Agricultural economics—AGEC 615
Anthropology—ANTH 200, 204, 220, 260, 505, 506, 508, 511, 512, 515, 516, 517, 536, 545, 550, 604, 618, 630, 634, 640, 673, or 676
Economics—ECON 505, 506, 507, 536, 681, or 682
Geography—GEOG 100, 200, 201, 505, 506, 620, 640, 650, 710, or 715
History—HIST 250, 350, 504, 505, 506, 509, 510, 514, 543, 544, 545, 560, 561, 562, 564, 576, 577, 578, 591, 592, 593, or 598
Journalism and mass communications—MC 725
Management—MANGT 690
Marketing—MKTG 544
Modern languages—RUSSN 250, 504, 508, or 552; FREN 503
Political science—POLSC 333, 505, 506, 511, 541, 543, 545, 622, 623, 624, 625, 626, 627, 628, 629, 642, 645, 647, 649, 651, 652, or 653
Sociology—SOCIO 505, 506, 507, 535, 618, or 742

Students may use the fourth course in a single foreign language sequence (other than Latin) to satisfy the international studies overlay requirement.

Additional requirements for the B.A.

Foreign language

Level 4 (i.e., French 4, German 4, Spanish 4, etc.) or the equivalent of level 4 in a foreign language sequence offered by the Department of Modern Languages. (Conversation "4A" courses do not meet the level 4 requirement.)

Purpose: to bring students to a point at which they are able to proceed on their own to a command of a second language—a key for access both to a foreign culture and to much primary and secondary material in many special fields.

Mathematics

(One 3-credit-hour course, 100-799 level, or any other course for which there is a mathematics prerequisite)

Purpose: to give students a college-level competence in mathematical reasoning and analysis.

Any course used to satisfy this requirement cannot be used to satisfy any other general education requirement.

Additional requirements for the B.S.

Natural sciences

(One course, 3 credit hours minimum, with a prerequisite in the same department; for this requirement, biochemistry courses with a chemistry prerequisite qualify as upper-level courses.)

Purpose: to give students who elect the bachelor of science degree an especially solid foundation in the natural sciences.

Courses that qualify are those listed earlier under natural sciences, and:

Kinesiology—KIN 330 or 335 or 650
Psychology—PSYCH 470 or 480

Quantitative and abstract formal reasoning

Purpose: to give students training in a clear, nonambiguous, simplified language for the efficient transfer and logical analysis of information—a language in which a good deal of discussion is conducted in the sciences.

A course that satisfies this requirement may at the same time be used to satisfy any major requirement for which it qualifies. Fulfill this requirement one of three ways:

1. Three courses, 9 credit hours minimum, selected from:
   Computer science—200 level or above
   Mathematics—100 level or above
   Philosophy—PHILO 110, 220, or 510
   Statistics—any course
2. One course and its Level II prerequisite, selected from:
   Geography—GEOG 700 (with a statistics course)
   Physics—PHYS 113 (with MATH 150)
   PHYS 223 (with MATH 221)
   PHYS 224 (with MATH 221)
   PHYS 325 (with MATH 240)
   Sociology—SOCIO 520 or 725 (with STAT 330)
   Social work—SOCWK 519 (with STAT 330)
3. Equivalent competency:
   Competency may be demonstrated by taking two Level II courses or a Level III course from:

Level II courses (two courses):
Computer science—CIS 200
Mathematics—MATH 150, 205, or 210
Philosophy—PHILO 510
Statistics—STAT 320, 330, 340, 350, 702, or 703

Level III courses (one course):
Computer science—CIS 300 or 350
Mathematics—MATH 210 or 220
Philosophy—PHILO 701
Statistics—STAT 341, 351, 704, or 705

Bachelor of Fine Arts

120 hours required for graduation

The bachelor of fine arts degree is a professionally oriented undergraduate degree in art. Emphasis is on actual practice in the creative art disciplines. The degree is considered the appropriate preparation for the master of fine arts degree, which is recognized as the terminal degree in studio arts, and for the master of arts in art therapy, which is required for certification as an art therapist. The B.F.A. in art is a four-year, 120-credit-hour program with emphases possible in painting, sculpture, ceramics, graphic design, printmaking, metalsmithing and jewelry, drawing, and pre-art therapy. The degree requirements are as follows:

Basic requirements (45 hours)

Communications—English composition, two courses; and oral communication, one course
Social sciences—two courses
Humanities—three courses
Philosophy or mathematics—one course
Natural sciences—two courses, one with a lab
General electives—11-19 hours

Art courses (75 credit hours)

Core—39 hours
Major—21 hours
Art electives and related courses—15 hours

Bachelor of Music

129–134 credit hours required for graduation

Areas of concentration offered in this curriculum are: all instruments, voice, and composition. A secondary performance area also is required.

Basic requirements (42 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 106	Public Speaking I	3
PHYS 101	The Physical World I	3
PSYCH 110	General Psychology	3
Nonmusic electives		minimum of 9
Modern language		two courses minimum

The remaining hours are to be taken in the area of concentration. For specific music requirements, see the Music section of this catalog.

Bachelor of Music Education

136–139 credit hours required for graduation, depending on emphasis

The program of study leading to this degree is a nine-semester curriculum designed to prepare music teachers for grades K-12. With careful planning and enrollment during summer session(s) all requirements may be completed in four years. Within this curriculum there are two optional emphases—one in vocal/choral music, the other in instrumental music.

Basic requirements

ENGL 100	Expository Writing I	3
	and	
ENGL 200	Expository Writing II	3
	or	
ENGL 110	English Honors Composition I	3
	and	
ENGL 125	English Honors Composition II	3
SPCH 106	Public Speaking I	3
Any Department of English literature course (except ENGL 355 or 545) or Department of Modern Languages literature course		3
Any course offered in the Department of Philosophy (except PHILO 110 or 220) or SPCH 320 or SPCH 330 or SPCH 434 or any two courses in a modern language		3–10

	Fine arts elective (fulfilled by courses in the major)	3
PSYCH 110	General Psychology	3
	Any course from the Department of History	3
	Any additional social science course that addresses cultures outside the Western tradition (excludes those dealing primarily with the Greek, Roman, Western European, or North American experiences)	3
	Two courses from the natural sciences (one course must include a lab)	7
MATH 100	College Algebra or higher level math course or grade of C or better on Algebra CLEP test	3
STAT 320	Elements of Statistics or higher level statistics course	3
FSHS 110	Introduction to Human Development	3

Electives to complete a total of 46 hours (not more than 3 hours of music may be counted.)

The remaining hours are to be taken in the area of concentration. For specific music requirements, see the Music section of this catalog.

Associate of Arts at Fort Riley

60 hours including the following general requirements:

English—ENGL 100 and 200
Speech—SPCH 105 (or one course), courses subject to approval by Department of Speech
Modern languages—two years in one language or equivalent competence
Mathematics—one course
Humanities—three courses from: art, dance, English, history, modern languages, music, philosophy, speech, and Introduction to Women's Studies. No more than three courses in history may be used to fulfill humanities and social sciences requirements.
Social sciences—three courses from: anthropology, economics, geography (excluding GEOG 220 and 221), history, political science, psychology, sociology, social work, mass communications, and Introduction to Women's Studies. No more than three courses in history may be used to fulfill humanities and social sciences requirements.
Natural sciences—four courses, including one laboratory course and one course that has a prerequisite in the same department: biochemistry, biology, chemistry, computer science, geography, (GEOG 220 and 221 only), geology, mathematics, physics, or statistics

Associate of Science at Fort Riley

60 hours including the following general requirements:

English—ENGL 100 and 200
Speech—SPCH 105 (or one course), courses subject to approval by Department of Speech
Humanities and social sciences—seven courses, taken from at least two departments, including one course in philosophy, from: anthropology, art, dance, economics, English, geography (excluding GEOG 220 and 221), history, modern languages, music, philosophy, political science, psychology, sociology, social work, speech, mass communications, and Introduction to Women's Studies
Natural sciences—four courses, including one laboratory course and one course that has a prerequisite in the same department: biology, biochemistry, chemistry, computer science, geography (GEOG 220 and 221 only), geology, mathematics, physics, or statistics

Institute for Social and Behavioral Research

James Shanteau, Director

The Institute for Social and Behavioral Research promotes, encourages, and facilitates research and advanced studies in social behavioral, and statistical sciences. This interdisciplinary institute enhances research by faculty and students, aids faculty in securing research funding, attracts and trains top-quality graduate and undergraduate students through fellowship programs, and provides outreach services to public agencies and institutions in Kansas. ISBR also sponsors workshops and offers research fellowships to faculty and students.

Programs coordinated by ISBR include the Survey Research Unit, the Labor Studies Program, the Statistical Design and Analysis Unit, the Population Research Laboratory, and the Advanced Research Developed Program. These programs both conduct their own research and facilitate research by faculty and students.

Program Options

Honors program

The honors program offers intellectually able and motivated students experiences in the humanities and in the social-behavioral and natural sciences that are challenging and unusual in breadth and focus. By stressing liberal studies in the freshman and sophomore year, interdisciplinary study in the junior year, and independent study in the senior year, the honors program enables students to develop broad intellectual interests.

The honors program further enriches the experiences of its members by creating opportunities for them to develop a sense of community and to meet faculty and distinguished guests of the university in informal settings.

Students with high ACT scores are invited to participate in the honors program during the freshman year. Formal admission to the program is granted at the end of the freshman year to students who have achieved a 3.3 GPA.

Students in the honors program are expected to enroll in DAS 110 Introduction to the Honors Program in arts and sciences and an honors section of ENGL 125 Honors English II or receive consent of the director. Students must complete: two seminars, one in social sciences or humanities and one in the natural sciences or mathematics; an interdisciplinary colloquium, and research leading to a senior thesis, an independent creative/research project, under the supervision of a faculty member of the student's choice, during the senior year. Honors sections of regular Arts and Sciences classes are also available each semester.

The senior study culminates in an honors thesis or other documentation of performance, which is filed with the director. This project is invaluable as evidence of a student's ability to organize and complete a study independently. It provides evidence of capability to do well in graduate studies and may enable the student to strengthen significantly an application to graduate school. It may also help make the case for a scholarship application or serve as the impetus for more detailed investigation later in the student's career. Honors students are encouraged to complete a four-course sequence in a modern language other than English.

All phases of the honors program emphasize oral and written communication, both as a method of demonstrating one's understanding of a subject, and as a strategy for developing one's thinking skills. In addition to the curricular options described, students in the honors program have many opportunities to individualize their courses of study. Student-designed curricular plans may be approved with the consent of department heads involved, the director of the honors program, and the dean of the college. Students are also encouraged to propose other plans in their course work, including off-campus learning experiences that may be supplemented by reading, discussion, and reporting for course credit with the approval of the proper supervising faculty.

A transfer student or other upperclassman who has a grade point average of 3.3 and who receives a positive evaluation by the director may be admitted to the honors program as late as the beginning of the junior year. Students who wish to be considered for late admission should contact the director.

For more information, contact the director of the honors program, College of Arts and Sciences, Office of the Dean.

DAS 110. Introduction to the Honors Program in Arts and Sciences. (1) I. Direction and goals for the honors program in the College of Arts and Sciences.

DAS 388. Honors Internship. (1–3) I, II, S. A scholarly investigation related to activities in a place of employment or in a volunteer situation. Written and oral presentations are required. Pr.: Concurrence of a faculty advisor and approval of the arts and sciences honor program advisory council.

◆**DAS 450. Honors Colloquium.** (3) An interdisciplinary colloquium in which topics vary by semester. Consistently incorporates perspectives from more than one discipline and area among the arts, humanities, social sciences, and sciences. Pr.: Membership in the honors program; one honors course in addition to introduction to the honors program in Arts and Sciences.

Freshman Seminar

Freshman Seminar introduces students to what a university is, the purpose of a university education, and what it means to be an educated person. This is done, not through a lecture approach, but through sharing the varied cultural and intellectual activities that occur at K-State, demonstrating by example the characteristics of educated persons and the importance of higher education.

◆**DAS 100. Freshman Seminar.** (2) I. An introduction to the intellectual and cultural life of Kansas State University.

Study abroad

Barry Michie, Director
304 Fairchild Hall
785-532-5990

The Office of Study Abroad should be the first stop for students who wish to study in another country for a year, a semester, a summer, or an intersession.

In addition to a number of good language programs, there are opportunities to study almost every subject from art to zoology in Africa, Asia, Canada, Latin America, and Europe. Every attempt is made to ensure the best match between the interests of a student and the ingredients of a program sponsored by K-State or by another institution.

Students may apply for scholarships, such as the Fulbright or the Pearson, or scholarship-exchanges, such as the K-State/Justus Liebig year abroad. Through the International Student Exchange Program it is possible to study for a semester or a year at one of 100 colleges and universities outside the U.S. for the same cost as tuition, room, and board at K-State. Financial aid from almost every agency is applicable to all credit-earning programs.

Cooperative education

Cooperative education is the integration of academic experience with planned, paid employment experiences related to a student's academic major or career goals. Check with Career and Employment Services for eligibility requirements, available opportunities, and faculty contacts.

Linguistics

The Departments of English, Modern Languages, Speech, and Sociology, Anthropology, and Social Work offer cross-listed linguistics courses available for either graduate or undergraduate credit.

The courses provide students in education, anthropology, foreign languages, psychology, philosophy, literature, and other areas an opportunity to appreciate both the rich structure of language itself and the relationships between their disciplines and linguistic studies.

For further information about linguistics courses, contact either the participating departments or the linguistics advisor in 110 Leasure Hall.

Secondary teacher certification

An arts and sciences major may apply some elective hours toward the requirements for secondary teacher certification. In most arts and sciences departments, students can complete an academic major and earn certification within the 120 hours of course work required for a degree. Because the teacher training courses are offered through the College of Education, students who choose to combine these two programs are entitled to two advisors, one in the major field of study, the other in secondary education.

By combining a traditional academic major with teaching certification, students can be assured of varied choices after graduation. By pursuing an arts and sciences major, students also have the option of working toward a bachelor of arts degree and studying a foreign language. In addition, the teaching certification will qualify graduates to teach in a public secondary school. For specific certification requirements in secondary education, see the College of Education section of this catalog.

Advising

Students with undeclared, interdisciplinary, and pre-professional majors are advised in the office of the dean. Students with other majors are assigned an advisor by the department head who supervises the majors. In all cases, advisors try to ensure that students design their curricula to meet such goals as: the ability to think, speak, and write with clarity and precision; knowledge of another culture or another language; knowledge and appreciation of science and technology; familiarity with major artistic and literary forms; and exposure to moral and ethical issues.

University Undergraduate Studies

Interdisciplinary options

Interdisciplinary options within the university undergraduate studies major provide an opportunity for students to organize their interests within a broad area of study rather than within the narrower focus required by a major in a single discipline. Students who want to create their own fields of emphasis and students who are eager to pursue multidisciplinary solutions to complex problems often choose an interdisciplinary major. Other students choose interdisciplinary study as a second major, adding it to a departmental major in order to gain expertise in complementary areas.

Advising for undeclared students: open option

Students in the university undergraduate studies major may declare one of the interdisciplinary options upon entering the major or they may enter in the open option. Students in the open option must declare one of the interdisciplinary options or another major on or before the completion of 60 credit hours. It is strongly recommended that students with more than 45 cumulative hours not enter the open option. However, transfer students and those facing exceptional circumstances may enter the open option with more than 45 hours on the recommendation of an open option advisor. Such students may remain in the open option for one semester.

The university undergraduate studies major offers the open option and four interdisciplinary options:

Degree option	Degree(s)	Credit hours
Humanities	B.A. only	36
Life science	B.S. or B.A.	36
Physical science	B.S. or B.A.	37
Social science	B.S. or B.A.	36

The requirements for each of the interdisciplinary options are sufficiently flexible to allow students, in consultation with their advisors, to devise degree programs designed to meet their particular needs, interests, and career goals.

Humanities

The humanities disciplines require the study of cultural artifacts, traditions, and activities. The purpose of cultural study is to learn what culture means and how individuals operate within it. This study should enable students to understand their own places in existing traditions, and help them to contribute positively to the development of new ones. Creativity, imagination, and interpretation are central to humanistic study. The humanities disciplines include art, dance, speech, theater, history, languages, literature, music, and philosophy. A humanities major leads to the traditional liberal degree, the bachelor of arts.

A student seeking admission to the program must submit a plan of study to an interdisciplinary humanities advisor in the College of Arts and Sciences dean's office for approval. This proposal must include a rationale or thematic design for the interdisciplinary degree and a tentative listing of courses. The student must confer with other humanities faculty members who have special expertise in the areas of the student's interest. This procedure should be accomplished before or during the semester in which the student completes 60 credit hours toward the degree. *The student's proposal must be approved by the Humanities Advisory Committee.*

The humanities major consists of 36 credit hours.

Fifteen credits must be completed in each of two humanities disciplines; these should be selected from among courses normally counted toward a major in the field.

At least 15 credit hours must be completed in humanities disciplines at the 500–699 level, including at least two courses in each of the two humanities concentration areas. (Students interested in music are encouraged to seek special advising in the music department.)

No more than 9 credit hours may be counted toward both the general requirements and the major.

A student with a well-defined theme that exceeds the scope of these requirements may petition the Humanities Advisory Committee for an appropriate waiver.

A 2.0 GPA in the major is required for graduation.

Life sciences

Life science is a multidisciplinary major that deals with studies of living organisms and life processes.

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOCH 265	Introductory Organic and Biological Chemistry	5
	or	
CHM 350/351	General Organic Chemistry and Lab	5
BIOL 455	Microbiology	4
ANTH 280/281	Introduction to Physical Anthropology and Lab	4
Psychology course with prerequisite		3
Electives		11*
		36

*The 11 remaining elective hours must be selected from two or more of the following fields: biochemistry, biology, microbiology, organic chemistry, physical anthropology, and psychology. At least two of these courses must have a prerequisite. A 2.0 GPA is required in the major for graduation.

Physical science

Physical science is a multidisciplinary major that deals primarily with nonliving matter. It concerns itself with the theoretical and observable natural phenomena of our world and universe.

Student majoring in physical science must earn grades of C or better in all courses prescribed for this curriculum, including electives, as outlined below.

Math 220	Analytic Geometry and Calculus I	4
Statistics 320, 340, 410, or 510		3
CHM 210	Chemistry I	4
	or	
CHM 220	Chemical Principles I	5
	and	
CHM 230	Chemistry II	4
	or	
CHM 250	Chemical Principles II	5
PHYS 113	General Physics I	4
	or	
PHYS 213	Engineering Physics I	5
	and	
PHYS 114	General Physics II	4
	or	
PHYS 214	Engineering Physics II	5
GEOL 100/103	Introduction to Geology and Lab	4
	or	
GEOG 220	Environmental Geography I	4
DAS 499	Physical Science Senior Report	1
Electives		5–9*

*Students must complete a total of 37 hours in the major. Electives must be selected from the following:

Computing and information sciences—200 or above
Chemistry—350, 351, 371, 500 or above
Geology—100, 102, 105, 130, 500 or above, except 512
Geography—221
Mathematics—221, 222, 240, 510, or 551
Physics—122, 191, 300 or above, except 515
Statistics—341, 511, or above

Problems, seminar, or topics courses are not acceptable unless listed above. At least five elective hours must have a prerequisite.

DAS 499. Physical Sciences Senior Report. (1) I, II. Individual exploration of an area of physical sciences culminating in a final formal written report. Capstone course required of physical sciences interdisciplinary major. Pr.: Permission of physical sciences advisor.

Social science

Social science is a branch of learning that examines society's institutions—their structures, theoretical foundations, evolution, and interrelationships—and how they affect and are affected by human behavior. The social science disciplines include anthropology, economics, geography, history, mass communications, political science, psychology, and sociology.

A student seeking admission to the program must submit a plan of study to an interdisciplinary social science advisor in the College of Arts and Sciences for approval. This proposal must include a rationale or thematic design for the interdisciplinary degree and a tentative listing of courses. The theme or rationale should run through a minimum of 12 hours of courses in the major. One course outside the stipulated social science disciplines may be used to count toward the major if the course fits the student's theme. No more than one course may be used unless more seem to be necessary to fulfill a student's theme.

The student's social sciences advisor may encourage him or her to confer with other social science faculty members who have special expertise in the area of the student's interest. This procedure should be accomplished before or during the semester in which the student completes 60 hours of university credit.

A total of 36 credit hours must be completed with at least 3 credits being completed in each of four different social science disciplines.

At least 9 credit hours must be completed in one social science discipline, including at least one course at the 500–699 level.

At least 15 credit hours must be completed in social science disciplines at the 500–699 level.

No more than 9 credit hours may be counted toward both the general requirements and the major.

A 2.0 GPA in the major is required for graduation.

The social science major is not available to students who will earn a degree in anthropology, economics, geography, history, mass communications, political science, psychology, or sociology.

Students must complete at least one course in social science research methods or data analysis. This course may be any statistics course that a student is qualified to take or may be selected from: GEOG 700 Quantitative Analysis in Geography; HIST 586 Junior Seminar in History; POLSC 400 Political Inquiry and Analysis; POLSC 700 Research Methods in Political Science; PSYCH 350 Experimental Methods in Psychology; SOCIO 520 Methods of Social Research; STAT 330 Elementary Statistics for the Social Sciences.

The research/data course cannot be used to fulfill any other requirement in the major. It can, however, be used to fulfill a general requirement.

Pre-Law

Pre-professional programs are advised in the College of Arts and Sciences dean's office.

Law schools across America select students from a wide variety of majors. As a result, there is no pre-law major or prescribed curriculum at K-State; rather, pre-law is an interest area for students interested in potentially attending law school. If a student is undecided, the pre-law advisor will help the student explore curriculum options with the goal of finding a major.

Pre-law students may select the major of their choice in any college on campus. The Association of American Law Schools does not prescribe a particular pre-law curriculum; however, it does emphasize the selection of rigorous courses that will aid students in the development of critical and analytical thinking skills, a facility with written and spoken expression, an understanding of our society's institutions and values, and creative power in thinking. The development of these capacities is a highly individualized process to be pursued in consultation with the student's major advisor and the pre-law advisor.

Students in all majors who are considering attending law school should consult with the pre-law advisor in the College of Arts and Science dean's office as early as possible in their undergraduate career. Additional information about pre-law can be found on the College of Arts and Sciences homepage at *www-personal.ksu.edu/~jusnic/prelaw.html*.

Pre-Health Professions Program

Pre-professional programs are advised in the College of Arts and Sciences dean's office.

As careers in health professions continue to be plentiful, applicants to the professional training programs become more numerous and requirements for admission into those programs become more stringent. One of the universal requirements for admission is a high grade point average. For this reason students entering K-State for the first time as freshmen will enroll in the pre-health professions program (PHPP). Students requesting transfer into a health professions curriculum with previous academic work at K-State or elsewhere must have a 2.75 GPA or higher to enroll in PHPP. For purposes of admission into PHPP, GPAs will be based on all courses attempted at colleges or universities.

The pre-health professions program will allow students to establish a firm base for application to the professional school of their choice. During the time in PHPP students will be advised in the health professions advising office for two semesters, normally 30 credit hours, during which time they will take communications, humanities, social science, natural science, and math courses required for their chosen professional program.

PHPP students are required to enroll in Orientation to Health Careers (DAS 115) to acquaint them with the variety of health professions available, requirements for entry to professional schools, characteristics of the health professional, and issues in health care delivery.

Admission to a pre-health curriculum (pre-medicine, pre-physical therapy, etc.) will be granted after completion of the 30 hours with a GPA of 2.75 or above. Students with a GPA below 2.75 will be required to find an alternative to a pre-health curriculum.

DAS 115. Orientation to Health Careers. (1) I. Acquaints students whose career goals are in the health professions fields with the variety of options available and with the corresponding academic requirements. Discussion covers an introduction to the personal responsibilities that health-care workers assume and the impact of social and economic problems on our health-care delivery system. Includes an orientation to general requirements for success as a student at K-State and in professional health related programs.

DAS 240. Practicum in Pre-Health. (1) I, II, S. Forty hours spent observing the practice of dentistry, medicine, or optometry. Students are under the supervision and direction of individual dentists, physicians, or optometrists. Pr.: Sophomore standing, permission of the health professions advisor.

Medical technology

The medical technology curriculum requires 90 semester hours of preclinical courses and 10 to 18 months of work at one of the affiliated clinical programs in Hays, Kansas City, or Wichita. Admission into that portion of the training is by application; students are expected to have a minimum GPA of 2.0 to 2.5 for both overall work and for the required science courses. All the requirements for a bachelor's degree must be completed before a student is allowed to sit for the certification examination.

In addition to the general requirements for a bachelor's degree in the College of Arts and Sciences, the following courses are required:

Preclinical courses

One course in statistics		3
MATH 100	College Algebra	3
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Laboratory	2
	or	
CHM 371	Chemical Analysis	4
BIOL 198	Principles of Biology	4
BIOL 455	Microbiology	4
BIOL 670	Immunology	4

Select two of the following courses:

BIOL 530	Pathogenic Microbiology	3
BIOL 240	Human Body	8
BIOL 545/546	Parasitology and Lab	5

Internship in affiliated school of medical technology 30

Recommended courses:

BIOL 400	Human Genetics	3
CIS 101–104	Introduction to Personal Computers	1–4
MANGT 420	Management Concepts	3

Either CHM 371 or BIOCH 522—whichever was not taken above

DAS 001. Medical Technology Clinical Semester. (Var.) I, II, S. Enrollment in this course allows students attending a hospital-based clinical program to complete the 30 credit hours of clinical work required for the bachelor's degree in medical technology. Pr.: Completion of the 90 credit hours of undergraduate course work required for the medical technology degree.

Clinical courses (taken during internship)

DAS 401. Clinical Microbiology. (6–8) II. The theory and laboratory study of pathogenic bacteria, viruses, richettsiae, fungi, and parasites. Includes morphology, physiology, taxonomy, and medical significance.

DAS 402. Clinical Chemistry. (6–8) I. Theory and laboratory study of analytical biochemistry, incorporating both routine and special chemical procedures.

DAS 403. Clinical Hematology. (4–6) S. Study of blood cell derivation, maturation, and function, principles of hemastasis, and blood coagulation. Methodology used in routine and special hematology studies.

DAS 404. Clinical Immunology. (2–6) I. Immunohematology, the study of fundamentals of antigen-antibody reactions, blood groups and types, crossmatches, blood components, and the laboratory methods used in immunohematology studies; and serology, the theory of immunologic responses and procedures used in determination of serological studies.

DAS 405. Topics in Medical Technology. (3–6) II. Basic principles and practices of the medical laboratory, techniques and special projects.

Contact the College of Arts and Sciences dean's office for more information.

Pre-dentistry

U.S. dental schools require applicants to satisfactorily complete a specified set of courses and to present acceptable scores on the Dental Admission Test. The majority of entrants earn bachelor's degrees prior to matriculating.* The courses listed in the predental major satisfy the admission requirements for most dental schools.

PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
	and	
CHM 351	General Organic Chemistry Laboratory	2
	or	
CHM 531	Organic Chemistry I	3
	and	
CHM 532	Organic Chemistry Laboratory	2
	and	
CHM 550	Organic Chemistry II	3
BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
Biology electives (400 level or above)		8
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3

*Students who enter dental school after completing only 90 credit hours, which include the courses listed in the predental major and the basic requirements for the B.A. or B.S. degree, may complete degree requirements by transferring 30 credit hours from an accredited dental school.

Contact the College of Arts and Sciences dean's office for more information.

Pre-medicine

Medical schools in the United States require applicants to complete a bachelor's degree before matriculating, to include a series of required science courses and a broad range of humanities and social sciences in their studies, to show leadership and an interest in the health field, and to present acceptable scores on the Medical College Admission Test. Kansas residents are given preference at the University of Kansas School of Medicine. The courses listed below constitute the pre-medical major and fulfill the course requirements at most U.S. medical schools and at the University of Kansas School of Medicine.

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 371	Chemical Analysis	4
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Laboratory	2
CHM 550	Organic Chemistry II	3
CHM 551	Organic Chemistry II Laboratory	2
MATH 220	Analytic Geometry and Calculus I	4
	or	
MATH 205	General Calculus and Linear Algebra	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
BIOL 198	Principles of Biology	4
BIOL 400	Human Genetics	3
	or	
ASI 500	Genetics	3
BIOL 510	Embryology	3
BIOL 511	Embryology Laboratory	1

Contact the College of Arts and Sciences dean's office for more information.

Pre-optometry

In order to apply for admission to a school of optometry, students are expected to successfully complete at least three years of college work including a set of specified science and math courses and to present acceptable scores on the Optometry Admission Test. Students must receive a bachelor's degree before the optometry degree will be granted. Pre-optometry is not a major toward an undergraduate degree.

The following courses satisfy the admission requirements at most optometry schools:

MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
MATH 220	Analytic Geometry and Calculus I	4
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOL 455	Microbiology	4
BIOL 240	Structure and Function of the Human Body	8
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
BIOCH 521	General Biochemistry	3
PSYCH 110	General Psychology	3
STAT 320	Elements of Statistics	3

Requirements for some optometry schools vary, so consultation with the pre-optometry advisor is recommended.

Contact the College of Arts and Sciences dean's office for more information.

Pre-veterinary

Seventy semester hours and satisfactory scores on the Graduate Record Exam are required for students applying for admission to the freshman class entering the College of Veterinary Medicine.

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Laboratory	2
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
BIOL 198	Principles of Biology	4
BIOL 510	Embryology	3
BIOL 511	Embryology Laboratory	1
BIOL 455	General Microbiology (with lab)	4
ASI 500	Animal Genetics	3
Social sciences and/or humanities		12
Electives		9
		70

Because the pre-veterinary curriculum is not a degree-granting program, students in arts and sciences are encouraged to combine the pre-veterinary requirements with a degree-granting major of their choice. Students should consult the pre-veterinary advisor in the College of Arts and Sciences dean's office.

The pre-veterinary requirements may be completed in the College of Agriculture if a student's major is in that college.

Pre-pharmacy

The admission committee of the Pharmacy School at the University of Kansas gives a preference to applicants who are Kansas residents. The following courses constitute their requirements.

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Laboratory	2
CHM 550	Organic Chemistry II	3
CHM 551	Advanced Organic Chemistry Laboratory	2
MATH 220	Analytic Geometry and Calculus I	4
BIOL 198	Principles of Biology	4
BIOL 240	Structure and Function of the Human Body	8
BIOL 455	General Microbiology	4
PHYS 115	Descriptive Physics*	4
	or	
PHYS 101	Physical World*	3
SPCH 106	Public Speaking I	3
Humanities and social sciences electives		9
Free electives		9

*Students who have completed high school physics with a grade of B or better may be exempt.

Requirements for other pharmacy schools vary, so consultation with the pre-pharmacy advisor is recommended.

Contact the College of Arts and Sciences dean's office for more information.

Pre-nursing

Students entering the pre-nursing curriculum take the necessary courses and electives for transferring to a school of nursing. The number and types of courses taken will vary depending on the school of nursing the student desires to attend. For students entering a baccalaureate degree program in nursing, generally two years of course work (60–65 credit hours), as prescribed by the university granting the degree, are required.

The following are core requirements needed for *most* BSN programs:

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 106	Public Speaking I	3
SOCIO 211	Introduction to Sociology	3
PSYCH 110	General Psychology	3
CHM 110/111	General Chemistry and Lab	4
BIOL 198	Principles of Biology and Lab	4
MATH 100	College Algebra	3
BIOL 455	General Microbiology	4
BIOL 240	Structure and Function of the Human Body	8
PSYCH 520	Life Span Personality Development	3
FN 132	Basic Nutrition	3
STAT	One introductory statistics course	3
Electives		(Var.)

The number of additional specific courses and elective hours vary with the BSN program of your choice. Individual advising is strongly recommended.

Contact the College of Arts and Sciences dean's office for more information.

Pre-physical therapy

To be eligible for the state's two physical therapy master's degree programs, which are located at the University of Kansas and Wichita State University, students should complete an undergraduate degree in the field of their choice. The following are core requirements needed for *most* physical therapy programs. Additional humanities, social sciences, and other electives are required and vary with each program. *Individual advising is strongly recommended.*

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 106	Public Speaking I	3
PSYCH 110	General Psychology	3
PSYCH 505	Abnormal Psychology	3
PSYCH 520	Life Span Personality Development	3
SOCIO 211	Introduction to Sociology	3
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
	or	
MATH 220	Analytic Geometry and Calculus I	3
STAT	One introductory statistics course	3
BIOL 198	Principles of Biology	4
BIOL 240	Structure and Function of the Human Body	8
BIOL 455	General Microbiology	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4

Contact the College of Arts and Sciences dean's office for more information.

Pre-occupational therapy

To be eligible for admission to regional occupational therapy programs, the following course work needs to be completed:

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
ENGL (Literature) 200+		3
SPCH 106	Public Speaking I	3
SOCIO 211	Introduction to Sociology	3
PSYCH 110	General Psychology	3
PSYCH 505	Abnormal Psychology	3
PSYCH 520	Lifespan Personality Development	3
CHM 110/111	General Chemistry and Lab	4
BIOL 198	Principles of Biology	4
BIOL 240	Structure and Function of the Human Body	8
MATH 100	College Algebra	3
STAT	One introductory statistics course	3
PHYS 113	Physics I	3
CIS 110	Introduction to Personal Computing	3
Basic art course*		3
Restricted liberal arts elective		3
Humanities		(Var.)
Philosophy		6
General electives		11

*Tangible art/craft classes (metal and jewelry, drawing I, sculpture, weaving, ceramics, painting, etc.)

Individual advising is strongly recommended.

Contact the College of Arts and Sciences dean's office for more information.

Pre-respiratory therapy

Advising is available for two years of preparatory work for application to respiratory therapy programs. The following classes should be taken:

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 106	Public Speaking	3
MATH 100	College Algebra	3
STAT	One introductory statistics course	3
CHM 110/111	General Chemistry and Lab	4
BIOL 198	Principles of Biology	4
BIOL 240	Structure and Function of the Human Body	8
BIOL 455	General Microbiology	4
PHYS 115	Descriptive Physics	4
LATIN 105	Latin and Greek for Scientists	1
Social science electives		3
Humanities electives		9
Math and science electives		3–5
Electives		6

Individual advising is strongly recommended.

Contact the College of Arts and Sciences dean's office for more information.

Pre-health information management

The pre-health information management curriculum is a three-year program. Qualified applicants then apply to the health information management program at the University of Kansas. The following course work needs to be completed:

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
ENGL 516	Written Communication for Sciences	3
SPCH 106	Public Speaking	3
STAT	One introductory statistics course	3
PSYCH 110	General Psychology	3
SOCIO 111	Introduction to Sociology	3
Social science elective		3
BIOL 198	Principles of Biology	4
BIOL 240	Structure and Function of the Human Body	8
Science elective		4
MANGT 420	Management Concepts	3
MANGT 531	Personnel and Human Resource Management	3
MANGT 390	Business Law	3
CIS 101–104	Introduction to Personal Computing	4
Humanities electives		6
Electives		15

Individual advising is strongly recommended. Contact the College of Arts and Sciences dean's office for more information.

Aerospace Studies

Stan G. Weir, Head

Assistant Professors Anderson and Dorfman

108 Military Science Hall
532-6600

The Air Force Reserve Officer Training Corps provides the best means for undergraduate and graduate students to become officers in the United States Air Force. Upon completion of the university program, students are commissioned second lieutenants, and then enter active duty as a pilot, missileer, or navigator, or enter a technical or nontechnical career field; are deferred for graduate study, to enter active service after degree completion; or enter into Air Force-sponsored graduate study at full pay while serving as Air Force officers.

Any student—graduate or undergraduate—who is a U.S. citizen may become a cadet by enrolling in AERO 110. The duration of the program varies from two to four years, depending upon an applicant's previous experience and the availability of different options.

Scholarships

Full-time students who qualify to become Air Force officers, with two or more years left for degree completion (including graduate study), are eligible to apply for scholarships. If selected, students will have their tuition, fees, and book expenses paid for by the U.S. Air Force; they will also receive a $150 monthly stipend while in school. All payments are tax free.

Students who apply for and receive the Air Force Pre-Health Professions Scholarship, and are subsequently accepted to medical school, are guaranteed scholarship through medical school. The Pre-Health Professions Scholarship pays for tuition, fees, and books, plus $150 monthly. The medical school scholarship pays med-school tuition, fees, books, and more than $950 per month.

High school students considering the four-year Air Force College Scholarship Program must be highly motivated toward becoming Air Force officers. To qualify, students should be above-average scholars, be physically capable, possess leadership potential, and apply before December of the senior year. Financial benefits are the same as the undergraduate scholarships mentioned earlier. Applicants should contact their high school counselor or an AFROTC officer for applications and further information.

Four-year program

Basic course

Students electing the four-year program normally will begin with the General Military Course during the freshman or sophomore year. This program consists of four semesters of 1 credit hour each, counts toward all bachelor's degrees awarded by K-State, and in no way obligates students to a military commitment. Aerospace studies GMC courses are open to all students at the university without obligation to military service. Students in the GMC are provided uniforms, texts, and other equipment needed for their AFROTC courses. Students may begin enrollment in GMC courses at any time until two years prior to graduation (graduate or undergraduate).

Advanced course

The Professional Officer Course is the upperclass program and consists of four courses of 3 credit hours each, over a period of four semesters. All cadets in the POC become members of the Air Force Reserve and receive $150 a month and all necessary AFROTC texts and equipment. Upon completion of the POC and their degree requirements, students are commissioned as second lieutenants in the United States Air Force.

Two-year program

The two-year program consists of the POC phase only and may be taken during a student's final four semesters, undergraduate or graduate, at the university.

Prerequisites for selection include Air Force aptitude testing, an Air Force physical, and completion of six weeks of summer field training. Applicants should contact AFROTC before October 15.

Field training

Cadets practice their leadership and management skills in a cadet group. Cadets who are in the four-year program attend four weeks of field training at an Air Force base during the summer prior to entering the POC. Two-year program cadets attend six weeks of field training. During training, cadets are paid approximately $140 per week, and receive travel pay to and from the training base.

Extracurricular activities

Students enrolled in Air Force ROTC may participate in many activities including detachment-sponsored events and social functions. Cadets pursuing officers' commissions are eligible for membership in the Arnold Air Society, a national honorary professional and service organization established to foster good relations among Air Force ROTC, the Air Force, the campus, and the local community. Participation in the Arnold Air Society is voluntary.

Minor in military leadership

Military leadership is a multidiciplinary program designed to recognize the intensive leadership training completed by Air Force and Army officer candidates and to expand this knowledge and experience base through selected political science and history courses. Students who complete the minor program will then have their special knowledge documented on their transcript and diploma.

While designed for students in the Reserve Officer Training Corps, non-cadets who complete all program requirements can also receive this minor. See instructor for further details.

General military courses

AERO 099. Aerospace Studies Lab. (0) I, II. The leadership laboratory for aerospace studies. Students will receive leadership training and experience as well as training in Air Force customs and courtesies. Pr.: Instructor permission.

AERO 110. Aerospace Studies 1A. (1) I. A study of the mission and organization of the United States Air Force; U.S. general purpose and aerospace support forces. One hour of class a week.

AERO 111. Aerospace Studies 1B. (1) II. U.S. strategic offensive and defensive forces; their mission, function, and employment. One hour of class a week.

AERO 210. Aerospace Studies 2A. (1) I. The development of air power from its beginnings to the end of World War II. It traces the development of various concepts of employment of air power. One hour of class a week.

AERO 211. Aerospace Studies 2B. (1) II. The development of air power from the close of World War II to the present. It focuses upon factors which have prompted research and technological change and stresses significant examples of the impact of air power on strategic thought. One hour of class a week.

AERO 215 AFROTC Summer Program. (4) I. Mission and organization of United States Air Force, including function and employment; development of air power from its beginning to the present. Emphasis on factors prompting research and technological change and impact of air power on strategic issues. Taught off campus at selected Air Force bases. Pr.: Open only to students entering AFROTC program at the junior level.

Professional officers courses

AERO 310. The Professional Officer 3A. (3) I. A study of USAF professionalism, leadership, and management. Includes the meaning of professionalism, professional responsibilities, leadership theory, functions and practices, management principles and functions, problem solving, and management tools, practices, and controls. Three hours of class a week.

AERO 311. The Professional Officer 3B. (3) II. Continuation of AERO 310. Three hours of class a week.

AERO 399. Problem in Aerospace Studies. (Var.) I, II. Work offered in any of the AFROTC general or professional courses for students out of phase for graduation; material covered in a basic or advanced course. Pr.: Consent of department head.

AERO 410. Aerospace Studies 4A. (3) I. This course will examine the role of the professional officer in a democratic society; socialization processes within the armed services; the requisites for maintaining adequate national security forces; political, economic, and social constraints upon the overall defense policy-making process. Three hours a week.

AERO 411. Aerospace Studies 4B. (3) II. Focusing on the armed forces as an integral element of society, this course provides an examination of the broad range of American civil-military relations and the environmental context in which defense policy is formulated. Communicative skills are stressed. The role of contemporary aerospace power, and current and future employment of aerospace forces will also be examined. Three hours of class a week.

AERO 491. Introduction to Flight Training. (1) II. Basic aerodynamics, aviation weather, navigation, flight/mission planning, and introduction to undergraduate pilot/navigator training. Normally taken by senior professional officer course students. Pr.: Consent of instructor.

Anthropology

See the Department of Sociology, Anthropology, and Social Work.

Art

Anna Calluori Holcombe,* Head

Professors Holcombe,* Hower,* Kren,* Ikeda,* Munce,* Pujol,* and Sturr;* Associate Professors Clore, Culley,* Noblett,* Rex Replogle,* and Woodward;* Assistant Professors Andrus,* Brown,* Coppin,* Dollar, Hunt,* Ogg, Renata Replogle, Routson,* Schmidt,* and Swiler;* Emeriti Professors Garzio* and Larmer;* Associate Professors Hill and Vogt; Assistant Professor Love, O'Shea,* and Winegardner; Instructor Hagan.

Bachelor of arts

The B.A. degree in art consists of three parts: the general education courses outlined under the humanities curriculum; a core of beginning art courses to provide prerequisites and a broad range of art experience for the art major; and 15 hours concentration of related subjects that should provide a minimal basis for establishing professional competence. Concentration possibilities are in one of the following: painting, printmaking, ceramics, sculpture, drawing, art history, metalsmithing and jewelry, or graphic design. The bachelor of arts degree requires a minimum of 48 semester hours in art. The major requirements are as follows:

Art history (12 hours)		
ART 195	Survey of Art History I	3
ART 196	Survey of Art History II	3
ART 545	Twentieth Century Art History I	3
ART 550	Twentieth Century Art History II	3
ART 100	2D Design	3
ART 200	3D Design	3
ART 190	Drawing I	3
ART 210	Drawing II	3
ART 225	Figure Drawing I	3
Two-dimensional course choice*		3
Three-dimensional course choice**		3
Major concentration		15

**Two-dimensional courses:* Type and Design Principles, Oil Painting I, Photography in Art, Printmaking I, Watercolor I.

***Three-dimensional courses:* Ceramics I, Metalsmith and Jewelry, Sculpture I.

Bachelor of fine arts

The bachelor of fine arts degree is a professionally oriented undergraduate degree in art. It is designed primarily for those planning to become professional artists, artist-teachers, or art therapists. Greater emphasis is placed on actual practice in the creative art disciplines.

The degree is considered the appropriate preparation for the master of fine arts degree, which is recognized as the terminal degree in studio arts, and for a master's degree in art therapy, which is required for registration as an art therapist. The B.F.A. in art is a four-year, 120-hour program with concentrations possible in painting, sculpture, ceramics, graphic design, printmaking, drawing, metalsmithing and jewelry, and pre-art therapy. The major requirements are as follows:

Art history (15 hours)		
ART 195	Survey of Art History I	3
ART 196	Survey of Art History II	3
ART 545	Twentieth Century Art History I	3
ART 550	Twentieth Century Art History II	3
Art history electives		3
ART 100	2D Design	3
ART 200	3D Design	3
ART 190	Drawing I	3
ART 210	Drawing II	3
ART 225	Figure Drawing I	3
Two-dimensional course choice*		3
Three-dimensional course choice**		3
Two- or three-dimensional course choice*,**		3
ART 410	B.F.A. Exhibition	0
Major concentration		21
Art electives		15
		75

**Two-dimensional courses:* Type and Design Principles, Oil Painting I, Photography in Art, Printmaking I, Watercolor I.

***Three-dimensional courses:* Ceramics I, Metalsmith and Jewelry, Sculpture I.

Studios, laboratories, and equipment for creative work are provided and adequate to the needs of the art areas. Student work may be retained at the discretion of the faculty for an indefinite period of time for instructional and exhibition purposes.

Art education

Students may satisfy requirements to teach art in public schools by any of three programs: B.A. and teacher certification; B.F.A. and teacher certification; or B.S. in education with art concentration. Under the first two options students qualify for teacher certification by completing specified courses in the College of Education. See the College of Education approved programs section for more information.

Pre-art therapy

The B.F.A. with a pre-art therapy concentration provides a strong background in studio art and psychology plus an introduction to the field of art therapy. This program of study prepares students to do graduate studies in art therapy and related fields. To pursue a pre-art therapy concentration students must have completed 60 or more semester hours with a minimum of 2.5 K-State GPA overall, Completed K-State course work must include 9 hours of art studio and 9 hours of psychology.

Transfer students

Art hours transferred to K-State will be assigned by the art department. Students may use transfer hours toward their area of concentration only when obtained from a four-year college or university.

Computer application

The Department of Art includes a number of concentrations that require the use of the computer. The department, in order to help prepare students for their professional activities requires that students within these concentrations provide or have access to a computer and software to enhance their course of study. The Department of Art will provide information related to hardware and software options.

Art courses

ART 095. Art Assembly. (0) I, II. Recommended for all art and art education majors each semester. By appt.

◆**ART 100. 2 Dimensional Design.** (3) I, II, S. Introduction to and laboratory practice in the principles and elements of design. Emphasis is placed on organizational command of the two-dimensional picture plane and issues of illusion. Six hours lab.

◆**ART 190. Drawing I.** (3) I, II, S. Fundamentals of drawing as applied to the realistic and expressive representation of objects through the use of a variety of media and approaches. Six hour lab.

ART 193. Beach Museum Seminar and Contemporary Society. (3) I, II. An introduction to the Beach Museum as an example of the function of a museum in contemporary society. Lec.

◆**ART 195. Survey of Art History I.** (3) I. Historical development of art from pre-history through the Middle Ages.

◆**ART 196. Survey of Art History II.** (3) II. Historical development of art from the Renaissance to the nineteenth century.

ART 200. 3 Dimensional Design. (3) I, II, S. Introduction to and laboratory practice in the principals and element of design. Emphasis is place in the perceptions and use of spatial properties as related to components of three-dimensional art and design. Six hours lab.

ART 201. Graphic Design Survey. (1) I, II. Overview of the historical, cultural, and social issues related to the practice of visual communications. Lec.

ART 205. Graphic Design Studio I. (3) I, II. Development and preparation of design concepts for application to the printing process. (Black and white and color.) Six hours lab. Pr.: ART 201, 290.

ART 210. Drawing II. (3) I, II. Continuation of Drawing I, with strong emphasis on creative expression. Six hours lab. Pr.: ART 100, 190.

ART 220. Water Media I. (3) I, II. Introduction to painting with water-based media through a variety of techniques. Emphasis is placed on learning transparent watercolor. Six hours lab. Pr.: ART 100, 190.

ART 225. Figure Drawing I. (3) I, II. Sustained drawings of the human figure using a variety of media; introduction to human anatomy used by artists.Six hours lab. Pr.: ART 210.

ART 230. Sculpture I. (3) I, II. An introduction to the problems of sculptural form; fundamental techniques and theory in clay modeling, molding, casting, and direct plaster. Six hours lab. Pr.: ART 200.

ART 235. Printmaking I. (3) I, II. Introduction to the intaglio, lithographic, and serigraphic printmaking techniques and tools. Six hours lab. May be taken for three semesters in order to obtain experience in each of the three techniques. Pr.: ART 100, 190.

ART 240. Drawing III. (3) I, II. Continuation of Drawing II, emphasizing exploration in mixed media. Six hours lab. May be taken for two semesters. Pr.: ART 210.

ART 245. Oil Painting I. (3) I, II. Introduction to oil painting through a variety of techniques. Six hours lab. Pr.: ART 100, 190.

ART 265. Ceramics I. (3) I, II. Introduction to basic hand building techniques; decoration of ceramic forms using slips, stains, glazes. Student participation in Raku firing procedures; stacking and firing of electric kilns. Six hours lab. Pr.: ART 200.

ART 270. Metalsmithing and Jewelry. (3) I, II, S. Design and execution of small-scale, three-dimensional objects, involving the basic processes of raising, forging, and fabrication in semi-precious metals. The techniques of centrifugal and vacuum casting of precious metals will also be introduced as well as soldering and piercing. Six hours lab. Pr.: ART 200 or nonmajors consent of instructor.

ART 280. Art Education Seminar. (3) II. An introduction to concepts in art education. Research, literature, creativity, aesthetics, and the history of art education as they relate to teaching art. Six hours lab.

ART 285 Illustration. (3) I, II, S. Exploration of various applied drawing/painting/collage techniques and how they relate to illustration and layout. Various traditional and digital media will be utilized. Six hours lab. Pr.: ART 201.

ART 290. Type and Design Principles. (3) I, II. Application of design and type principles to the development of letterforms and to principles of symbology. Selected topics in design, i.e., perception, figure/ground; shape, visual dynamics, Gestalt principle; fundamentals of the design process: research, thumbnails/roughs, comprehensive, presentation, paste-up, and digital fines. Six hours lab. Pr.: ART 201

ART 295. Photography in Art I. (3) I, II. Understanding and using photography as an art form. The basic elements and principles of art are explored. Camera usage and photographic processing are covered. An adjustable camera is required. Six hours lab. Pr.: ART 100, 190.

ART 300. Special Studies in Art. (1–3) I, II. Specialized workshops or seminars conducted in studio, art therapy, art education, or art history. Lec.

ART 301. Human Form and Composition. (3) Intersessions only. Building stylization and expressive image making of the human form with experimental methods: use of color, mono-print, mixed media. A connected and sustained studio time available during intersession only, providing students a working rhythm without interruption from other course work. Six hours lab. Pr.: ART 100, 190.

ART 305. Introduction to Museum Studies. (3) I, II. Fundamentals of museum work including specific museum functions, role of professional personnel, and proper care and handling of art works.

ART 376. Studio Art Exploration. (3) II. Studio experiences in a variety of media including printmaking, fibers, drawing, and sculpture. Art materials, techniques, and process are explored. Six hours lab. Pr.: ART 100, 190, and 200.

ART 386. Photography in Art II. (3) I, II, S. Creative exploration of broad-based approaches to photographic images. Both camera and darkroom manipulations will be used in the process of image making. Six hours lab. Pr.: ART 295.

◆**ART 399. Sophomore Honors Seminar in Art.** (3) Selected topics in art. Pr.: For students in the honors program only.

ART 400. Computer Imaging. (3) I, II, S. Exploration of computer imaging through the use of paint system and image processing technologies. Two hours lecture, four hours lab a week. Pr.: ART 200 and 210.

ART 405. Illustration II. (3) I, II. Advanced studio that explores various techniques in illustration in traditional and digital media. Six hours lab. Pr.: ART 285.

ART 410. B.F.A. Exhibition. (0) I, II. The preparation and execution of a senior exhibition of the student's own creative work primarily from his/her area of concentration. The option of a portfolio presentation exists for students whose area of concentration is graphic design. The student will be responsible for all the arrangements for the exhibition including scheduling, installation, and publicity.

ART 425. Art for Elementary Schools. (3) I, II, S. Art methods, materials, and philosophy of children's art at different grade levels. Six hours lab.

ART 430. Independent Study—Ceramics. (1–5) I, II, S. Work in ceramics after competency has been achieved. Personal development is emphasized.

ART 435. Independent Study—Crafts. (1–5) I, II, S. Work in crafts after competency has been achieved. Personal development is emphasized.

ART 440. Independent Study—Drawing. (1–5) I, II, S. Work in drawing after competency has been achieved. Personal development is emphasized.

ART 445. Independent Study—Graphic Design. (1–5) I, II, S. Work in graphic design after competency has been achieved. Personal development is emphasized.

ART 450. Independent Study—Metalsmithing and Jewelry. (1–5) I, II, S. Work in metalsmithing and jewelry after competency has been achieved. Personal development is emphasized.

ART 455. Independent Study—Painting. (1–5) I, II, S. Work in painting after competency has been achieved. Personal development is emphasized. Permission of instructor and painting area head required.

ART 460. Independent Study—Printmaking. (1–5) I, II, S. Work in printmaking after competency has been achieved. Personal development is emphasized.

ART 465. Independent Study—Sculpture. (1–5) I, II, S. Work in sculpture after competency has been achieved. Personal development is emphasized.

ART 470. Independent Study—Water Color. (1–5) I, II, S. Work in water color after competency has been achieved. Personal development is emphasized.

ART 480. Independent Study/Research Computer Art and Design. (3) I, II, S. This course is intended to provide students an opportunity to focus on a specific visual project/problem that will be solved using computers to focus on as the primary tool/medium. Pr.: ART 400.

ART 545. Twentieth Century Art History I. (3) I. Origins and development of twentieth century art from 1890 to 1914. Pr.: ART 195 or 196.

ART 550. Twentieth Century Art History II. (3) II. Origins and development of twentieth century art from 1914 to 1950. Pr.: ART 195 or 196.

◆**ART 560. Art for the Exceptional Individual.** (3) I, II. Using art concepts and activities to meet the needs of the mentally deficient, physically impaired, or emotionally disturbed. Adaptation will be based upon art development of the intact individual. Three hours lec. Pr.: PSYCH 110. Same as EDCI 560.

ART 565. Ceramics II. (3) I, II. Advanced work on potter's wheel combined with hand-built forms. Consideration of simple kiln design, firing techniques, and procedures using various fuel burning kilns. Six hours lab. May be taken for four semesters. Pr.: ART 265.

ART 570. Oil Painting II. (3) I, II. Continuation of Oil Painting I. Emphasis on a more extensive understanding of concepts about painting which will lead to the development of a wider range of personal experience and expression. Six hours lab. Pr.: ART 245.

ART 575. Graphic Design: The Digital Environment. (3) I, II, S. Development and preparation of design concepts for application in the digital environment. World Wide Web documents/publications. CD-ROM, disk, and other presentation/delivery formats. Select topics in design. Six hours lab. Pr.: ART 201 and 400.

ART 576. Advanced Typography. (3) I, II, S. Typographic theory and use exploring formal and informal structures with an analysis of historic styles from the Dadaists through current typographic concepts. Multi-page layouts emphasized. Six hours lab. Pr.: ART 201 and 290.

ART 577. Graphic Design and Illustration III. (Workshop-Matrix) (3) I, II, S. Students selected by portfolio review, design projects to client specifications. May be repeated. Pr.: ART 576 or consent of instructor.

ART 580. Graphic Design Senior Studio. (3) I, II, S. Directed senior thesis project, portfolio and resume preparation. Selected topics in design. Six hours lab. Pr.: Instructor's permission (may be repeated once). ART 576.

ART 582. Internships in Graphic Design. (1–3) I, II, S. The student works with the supervision of faculty and an appointed professional. Emphasis is on the development of approaches to problem solving and strengthening related skills in visual communications within a professional setting. May be repeated for up to 9 hours credit. Pr.: ART 575 and consent of instructor.

ART 583. Graphic Design Professional Practices Seminar. (2) I, II. Professional design management, ethics, setting up a business, client/designer relationships, contractual options, billing practices, and operating procedures. Six hours lab. Pr.: ART 576.

ART 590. Approaches to Art Therapy. (3) I, II, S. Supervised studies in research relating to the art therapy profession, its current developments, and goals. Pr.: ART 560 or junior standing in a program that emphasizes work with special population groups and consent of instructor.

ART 595. Independent Study in Art Therapy. (1–5) I, II, S. This course offers students who have fulfilled the full sequence of art therapy course work an opportunity for individual advanced study. Area of research to be selected by the student under the advisement of the instructor. Pr.: ART 560, 590 and consent of the instructor.

ART 602. Art from 1950 to 1980. (3) I, II. Art movements beginning with abstract expressionism and continuing through pop, op, minimal, and conceptual art movements up to 1980. Pr.: ART 195 or 196.

ART 603. Art of the 1980s and Beyond. (3) I, II, S. The art movements of the 1980s beginning with photo-realism and continuing through pattern and decoration, new image art, neo-expressionism, and neo-abstraction. Pr.: ART 195 or 196.

ART 604. Greek Art History. (3) I, II. The art of classical Greece, from its Aegean origins through the Hellenistic period. Pr.: ART 195 or 196.

ART 608. Special Studies in Art. (1–6) I, II. Specialized workshops or seminars conducted in studio, art therapy, art education, or art history. Pr.: Three credit hours in the relevant area.

ART 612. Renaissance Art History. (3) I, II. Renaissance art of northern and southern Europe in the fifteenth and sixteenth centuries, with a brief discussion of its fourteenth century origins. Pr.: ART 195 or ART 196.

ART 622. Baroque Art History. (3) I, II. The development of the baroque period in northern and southern Europe, from its beginnings in the early seventeenth century to the rococo style of the eighteenth century. Pr.: ART 195 or 196.

ART 626. Independent Study—Photography. (Var.) I, II. Advanced work in photography, an emphasis on personal development. Competency in camera and photo-related processes required. Pr.: ART 295.

ART 628. Foreign Studies in Art History. (1–6) I, II, S. Participation in art history study abroad. Pr.: Three credit hours of art history and consent of instructor.

ART 630. Foreign Studies in Studio Art. (1–6) I, II, S. Participation in studio art study abroad. Pr.: Three credit hours of studio art and consent of instructor.

ART 632. The Development of American Art. (3) I, II. American art from the Colonial period to the beginnings of abstract expressionism in the early 1940s, with major emphasis on the late nineteenth and early twentieth century developments. Pr.: ART 195 or 196.

ART 634. History of Modern Sculpture. (3) I, II. Directions in sculpture since the time of Rodin. Pr.: ART 195 or 196.

ART 642. Nineteenth Century Art History. (3) I, II. Painting, sculpture, and architecture of the late eighteenth and nineteenth centuries, with emphasis on the art of France. Pr.: ART 195 or 196.

ART 654. Women in Art. (3) I, II. The work of women artists from early Middle Ages to the twentieth century, with emphasis on the contemporary period. Pr.: ART 195 or 196.

ART 662. Southwestern Indian Arts and Culture. (3) I, II. The development of southwestern Indian silversmithing, weaving, pottery, basketry, and painting from the prehistoric period through the twentieth century. Pr.: ART 195 or 196.

Undergraduate and graduate credit

ART 600. Advanced Drawing. (1–5. Credits over 3 hours must be approved by the instructor.) I, II. Upper-level drawing, development, and personal motivation. Lectures and problems directed toward an understanding of the historical development of drawing as well as investigations of contemporary attitudes. May be taken for four semesters. Pr.: ART 225, 240.

ART 601. Graphic Design History/Theory/Criticism. (3) I, II. Significant works from late nineteenth century to the present to provide understanding of the development and character of graphic design, artists, and designers. Six hours lab. Pr.: ART 576.

ART 610. Figure Drawing II. (3) I, II. Continuation of Figure Drawing I, with emphasis on individual expression. Six hours lab. May be taken for four semesters. Pr.: ART 225.

ART 615. Figure Painting. (3) I, II. Painting from the human figure with oil and plastic media. Six hours lab. May be taken for two semesters. Pr.: ART 245, 610.

ART 620. Water Media II. (3) I, II. Upper-level painting with emphasis on individual expression in water-based media, acrylic watercolor, gouache. Six hours lab. Pr.: ART 220.

ART 623. Advanced Concepts in Computer Art and Design. (3) I, II, S. Advanced level studio exploration of computers as a tool/medium for art disciplines. Two hours lec., four hours lab. a week. Pr.: ART 200, 400, and instructor permission.

ART 624. Photography Art Direction. (3) I, II. Relationship of photography to graphic design. Art direction of photographs, photograms, and related darkroom experimentation. Students must have a camera with adjustable shutter speeds and lens opening. Six hours lab. Pr.: ART 290.

ART 625. Independent Study-Art Education. (1–5) I, II, S. Work offered in art education after competency has been achieved. Personal development is emphasized. Pr.: Full sequence of courses related to art education subject matter.

ART 631. Contemporary Media Seminar. (3) I, II. A review of current trends in contemporary media and visual communication. Studio/lec. Pr.: ART 400.

ART 635. Printmaking II. (3) I, II. Advanced work in blockprints, serigraphy, lithography, and intaglio. Six hours lab. May be taken for four semesters. Pr.: ART 235.

ART 645. Sculpture II. (3) I, II. Emphasis on artistic development through exploratory experiences in the various media. Introduction to foundry techniques and welding processes. Six hours lab. May be taken for four semesters. Pr.: ART 230.

ART 650. Advanced Painting III. (3–6) I, II. Continuation of Painting II. Emphasis on individual directions in painting to attain personal expression and competency. Primarily for undergraduate painting majors. May be taken for four semesters. Pr.: ART 220, 245, 570 or 620.

ART 655. Metalsmithing Techniques. (3) I, II. Surface embellishment, container construction of various techniques, linkage, and mechanical problems will be explored in addition to stone setting. Six hours lab. May be taken for three semesters. Pr.: ART 270.

ART 660. Sculpture III. (1–5) I, II. Continuation of Sculpture II. Further exploration of media and technique, emphasizing the development of individual direction and expression. Primarily for undergraduate sculpture majors. May be taken for four semesters. Pr.: ART 645.

ART 665. Ceramics III. (1–5) I, II. Individual exploration and further development of ceramic design and glaze technology; continuation of kiln design and construction. Six hours lab. May be taken for three semesters. Pr.: ART 565.

ART 675. History of Ceramics. (3) I, II. History and development of ceramics; study of the use of pottery and other aspects of ceramics from earliest known records to present day. Use of slides and other visual materials. Pr.: ART 195 or 196.

ART 680. Metals Workshop. (1–5) I, II. A number of metalsmithing techniques will be explored by the upper division student with emphasis on experimental problems and possibilities. The development of an individual point of view will predominate throughout the course. May be repeated twice. Pr.: ART 655.

ART 685. Advanced Independent Study Design. (Var.) I, II, S. Advanced work in design-related subjects. Pr.: Full sequence of courses related to problem subject matter.

ART 690. Techniques in Teaching Art. (Var.) I. Lectures and class discussion of methods, consideration of suitable laboratory equipment, use of illustrative material, and preparation of courses of study. Pr.: Twelve hours in art or consent of instructor.

ART 695. Topics in Art History. (Var.) I, II, S. Independent exploration in selected problems in art history. Pr.: Twelve hours art history.

Biochemistry

Thomas E. Roche,* Head

Professors Davis,* Hedgcoth,* Kramer,* Muthukrishnan,* Reeck,* Roche,* and D. Takemoto;* Associate Professors Kanost,* Krishnamoorthi,* Mueller,* Tomich,* and Wang; Assistant Professors P. Smith, A. Zolkiewska, and M. Zolkiewski; Emeriti: Professors Burkhard, Clegg, Koeppe, Mitchell, Nordin, Parrish, and Ruliffson.

Biochemistry seeks to understand the molecular events of life processes. It applies chemical and physical techniques to elucidate the structure and organization of molecules, particularly macromolecules that are responsible for the structural organization as well as operation and control of all cellular processes. The emerging knowledge has broad importance and consequences for all areas of the life sciences.

The Department of Biochemistry offers work leading to bachelor of arts and bachelor of science degrees with majors in biochemistry. The B.A. degree provides a liberal education with sufficient emphasis on science for students who wish to prepare for certain professional schools. The B.S. degree prepares students for professional careers in biochemistry or entry into graduate biochemistry training programs.

To graduate, a student must have a grade of C or better in all science and mathematics courses required for the degree, including transfer courses, as specified below. In addition, to graduate a student must have a 2.2 GPA in required science and mathematics courses taken at K-State.

Bachelor of arts

The requirements for the B.A. degree with a major in biochemistry include the general requirements of the College of Arts and Sciences plus the following:

BIOCH 100	Biochemistry Orientation	1
CHM 220	Chemical Principles I	5
	and	
CHM 250	Chemical Principles II	5
	or	
CHM 210	Chemistry I	4
	and	
CHM 230	Chemistry II	4
	and	
CHM 371	Chemical Analysis	4
CHM 531	Organic Chemistry I	3
CHM 550	Organic Chemistry II	3
CHM 532	Organic Chemistry Laboratory	2
BIOCH 290	Biochemistry Seminar	2
BIOCH 522	General Biochemistry Laboratory	2
BIOCH 755	Biochemistry I	3
BIOCH 765	Biochemistry II	3
MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
BIOL 198	Principles of Biology	4
Biological science electives		8

These science courses satisfy the mathematics and natural sciences requirements shown in the general requirements for the B.A. degree.

Bachelor of science

The requirements for the B.S. degree with a major in biochemistry include the general requirements of the College of Arts and Sciences plus the following:

BIOCH 100	Biochemistry Orientation	1
CHM 220	Chemical Principles I	5
	and	
CHM 250	Chemical Principles II	5
	or	
CHM 210	Chemistry I	4
	and	
CHM 230	Chemistry II	4
	and	
CHM 371	Chemical Analysis	4
CHM 531	Organic Chemistry I	3
CHM 550	Organic Chemistry II	3
CHM 532	Organic Chemistry Laboratory	2
BIOCH 290	Biochemistry Seminar	2
BIOCH 755	Biochemistry I	3
BIOCH 756	Biochemistry I Laboratory	2
BIOCH 765	Biochemistry II	3
Upper-division biochemistry or chemistry electives (one hour of which must be BIOCH 799 Problems in Biochemistry)		3
MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
MATH 222	Analytic Geometry and Calculus III	4

Either option A or B

Option A:		
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
CHM 500	General Physical Chemistry	3
	or	
Option B:		
MATH 220	Analytical Geometry and Calculus	4
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5
CHM 585	Physical Chemistry I	3
Physical Studies of Biomacromolecules		3
BIOL 198	Principles of Biology	4
Biological science electives		8
Biology, statistics, or computer science elective		3–4

The science courses in this list satisfy the natural science and quantitative reasoning requirements shown in the general requirements for the B.S. degree.

Transfer students

Community college students who plan to transfer into either of the biochemistry curricula at the junior level should take the following science courses during their first two years of college:

A year of freshman chemistry—lecture and laboratory
A semester of analytical chemistry—lecture and laboratory
A year of organic chemistry—lecture and laboratory
A year of analytic geometry and calculus
A year of biology—lecture and laboratory

Completion of these science courses should allow students to go directly into biochemistry and advanced biology courses upon entry into a biochemistry curriculum.

Biochemistry courses

BIOCH 100. Biochemistry Orientation. (1) I. Discussion of biochemistry as a discipline in the life sciences.

BIOCH 101. Biochemistry Colloquium. (2) I, II. Offered by TELENET. Topics in biochemistry chosen to illustrate current research of scientists and methods chosen to study biological problems from a biochemical point of view. At each offering of this course a syllabus will be available giving the topics to be studied and the details of administration of the course. May be repeated once. Not open to biochemistry majors.

◆**BIOCH 110. Biochemistry and Society.** (3) I, II. A cultural and environmental approach to biochemical compounds and circumstances affecting man. Topics to be discussed include compounds of biochemical interest, biochemical evolution, food additives, heavy metals, drugs, and certain control chemicals, e.g., pesticides. Intended for nonscience majors.

◆**BIOCH 265. Introductory Organic and Biochemistry.** (5) I, II. For students in human ecology, nursing, and other areas desiring an integrated organic and biochemistry course to provide an understanding of carbohydrates, proteins, lipids, and digestive and metabolic systems. Three hours lec. and six hours lab a week. Pr.: CHM 110.

BIOCH 290. Biochemistry Seminar. (2) II. Lectures and discussions on basic topics in biochemistry. Pr.: BIOCH 100.

◆**BIOCH 399. Honors Seminar in Biochemistry.** (3) II. Lecture, guided reading, and discussion of topics of general interest in biochemistry. Topics will vary depending on the interests and backgrounds of students enrolled. Pr.: Freshman Honors Seminar.

BIOCH 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program. May be used by honors students to satisfy B.S. requirement for BIOCH 799. Pr.: BIOCH 755 or conc. enrollment.

BIOCH 521. General Biochemistry. (3) I, II, S. A basic study of the chemistry and metabolism of carbohydrates, lipids, proteins, and nucleic acids. Pr.: CHM 350.

BIOCH 522. General Biochemistry Laboratory. (2) I, II, S. A one-semester laboratory course with experiments relating to carbohydrates, lipids, proteins, nucleic acids, and enzymes. Six hours lab a week. Pr.: CHM 351 and BIOCH 521 or conc. enrollment, or BIOCH 755 or conc. enrollment.

BIOCH 590. Physical Studies of Biomacromolecules. (3) II. A lecture course providing an overview of the concepts and techniques of physical science as they are applied to study the structure and function of biomacromolecules, such as proteins and DNA. The applications discussed will range from those utilizing classical equilibrium thermodynamics to spectroscopic methods such as mass spectrometry, circular dichroism (CD), and nuclear magnetic resonance (NMR). Pr.: CHM 500 or equiv., and MATH 220 and 221, or equiv., and PHYS 113 and 114, or equiv.

BIOCH 599. Research Training in Biochemistry. (1–3) I, II, S. Provides laboratory experience for majors and nonmajors in research techniques contributing to ongoing biochemical research. May be repeated up to 8 hours. Pr.: *Background adequate for relevant techniques.

Undergraduate and graduate credit

BIOCH 700. Advanced Topics in Plant Biochemistry. (3) I; Fall 1994 and alternate years or on sufficient demand. An advanced treatment of topics of current interest in plant biochemistry, including photosynthesis and carbon metabolism, nitrogen fixation and nitrogen metabolism, structure and function of the higher plant genome, and production of material of economic interest. Pr.: *BIOCH 521 or 765.

BIOCH 755. Biochemistry I. (3) I. An introduction to physical methods, kinetics, and thermodynamics of biochemical reactions and bioenergetics, chemistry of proteins and amino acids, carbohydrate chemistry, and metabolism. BIOCH 755 and 765 are for students interested in a two-semester comprehensive coverage of biochemistry. For a one-semester course, enroll in BIOCH 521. Pr.: *Chemical analysis, one year of organic chemistry, differential and integral calculus.

BIOCH 756. Biochemistry I Laboratory. (2) I. An intensive laboratory course to accompany BIOCH 755. BIOCH 756 and 766 are sequential courses for students interested in a two-semester comprehensive coverage of experiments in biochemistry. For a one-semester laboratory course, enroll in BIOCH 522. Six hours lab a week. Pr.: *BIOCH 755 or conc. enrollment.

BIOCH 765. Biochemistry II. (3) II. Continuation of BIOCH 755; lipid chemistry and metabolism, amino acid metabolism, nutrition, nucleic acid chemistry and metabolism, integration of biochemical pathways and metabolic control mechanisms. Pr.: *BIOCH 755.

BIOCH 766. Biochemistry II Laboratory. (2) II. A continuation of CHM 756. Six hours lab a week. Pr.: *BIOCH 756 and 765 or conc. enrollment.

BIOCH 790. Physical Biochemistry. (3) I. A survey of biophysical methods most frequently encountered in biochemistry and related disciplines. The course emphasizes principles underlying methods used to determine the molecular weight and shape of biopolymers, and techniques used to detect conformational changes in polynucleotides, proteins, and polysaccharides. Pr.: *Calculus, a course in physical chemistry, BIOCH 755, 756, 765, and 766.

BIOCH 799. Problems in Biochemistry. (Var.) I, II, S. Problem may include laboratory and/or library work in various phases of biochemistry, agricultural chemistry, or nutrition. Pr.: *Background adequate for problem undertaken.

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*Nonmajors lacking these prerequisites should obtain consent of instructor before enrollment.

Biology

Brian S. Spooner, Division Director

Larry G. Williams, Associate Director, Undergraduate Studies

Professors Center,* Conrad,* Consigli,* Denell,* Guikema,* Hartnett,* T. Johnson,* Kaufman,* Knapp,* Perchellet,* Robel,* Roufa,* C. Smith,* Spooner,* Takemoto,* Upton,* Wilson,* and Wong;* Associate Professors Blair,* Chapes,* Dodds,* Gipson,* Klaassen,* Marchin,* Montelone,* Rintoul,* A. Smith, Tomb,* Urban,* Weis,* Welti,* and Williams;* Assistant Professors Clem, Cully,* Decker, Garvey, Guy,* Herman, L. Johnson,* Roe,* and Todd; Instructors Davis, Hook, Pacey, and Paulsen;* Emeriti: Professors Barkley,* Bode,* Fina,* Hansen,* Kramer,* Pady,* Pittenger,* and Zimmerman;* Associate Professors Lockhart* and McCracken;* Instructor Kundiger.

The biology undergraduate requirements provide students a basic understanding of biological principles and methods, and allow students to build on that base by further intensive or extensive study.

Course offerings and curricula accurately reflect both recent developments in the field of biology and changing requirements of students. Undergraduate majors are offered in biology, microbiology, and fisheries and wildlife biology, plus the professional (paramedical) and pre-professional areas. Students majoring in areas of the Division of Biology are assigned advisors to assist in planning their academic programs. Course offerings and degree requirements are sufficiently broad to allow great flexibility in tailoring a program of study to the interests and needs of an individual student. Undergraduate curriculum planning, including choice of areas of emphasis and elective courses, is ultimately the responsibility of students in consultation with their advisors.

Biology degree

Students in this major may obtain either the B.A. or B.S. degree. In addition to the requirements of the College of Arts and Sciences, biology majors must take the courses of blocks A, B, and C as listed below.

Block A: Courses offered by other departments

MATH 220	Analytical Geometry and Calculus I	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
BIOCH 521	General Biochemistry	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4

Prerequisites for MATH 220 are MATH 100 and 150 or four semesters of high school algebra and one semester of trigonometry plus appropriate math placement exam scores. Upon consultation with a Division of Biology advisor a student may substitute: Biochemistry I and II for General Biochemistry; Organic Chemistry I and II for General Organic Chemistry; Organic Chemistry I Lab for General Organic Chemistry Lab; and Engineering Physics I and II for General Physics I and II.

Block B: Division of Biology courses

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOL 430	Population Biology	4
BIOL 540	Molecular Biology	3
BIOL 541	Cell Biology	3

Block C: Biology major electives

In addition to the Block B courses students must take a minimum of 15 credit hours of biology courses at the 400* level or higher, including two courses providing a laboratory experience.

*Students who take BIOL 240 will be awarded 3 hours of biology elective credit.

Because the biology major has room for at least 20 hours of free electives beyond the 15 hours of biology electives, it is a popular major for students aiming at a variety of professional health disciplines, at graduate programs ranging from molecular biology to ecology, and at a diversity of bachelor's-level jobs. Depending on the student, free electives could be courses in computer science, statistics, foreign language, business, etc. and/or additional courses in biology, biochemistry, chemistry, and math.

Microbiology degree

Students in microbiology may obtain either the B.A. or B.S. degree. The requirements for a microbiology major, in addition to those requirements of the College of Arts and Sciences, include blocks A, B, and C as listed below.

Block A: Courses offered by other departments

MATH 220	Analytical Geometry and Calculus I	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
BIOCH 521	General Biochemistry	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4

Prerequisites for MATH 220 are MATH 100 and 150 or four semesters of high school algebra and one semester of trigonometry plus appropriate math placement exam scores. Upon consultation with a Division of Biology advisor a student may substitute: Biochemistry I and II for General Biochemistry; Organic Chemistry I and II for General Organic Chemistry; Organic Chemistry I Lab for General Organic Chemistry Lab; and Engineering Physics I and II for General Physics I and II.

Block B: Division of Biology courses

BIOL 198	Principles of Biology	4
BIOL 455	General Microbiology	4
BIOL 540	Molecular Biology	3
BIOL 670	Immunology	4
BIOL 675	Genetics of Microorganisms	3
BIOL 690	Microbial Physiology and Metabolism	2

Block C: Microbiology major electives

Students must take an additional 14 hours from courses listed below. At least half the 14-hour total must be laboratory courses.

BIOL 397, 495, or 697	Topics in Biology	1–3
BIOL 410	Biology of the Cancer Cell	2
BIOL 530	Pathogenic Microbiology (lab course)	3
BIOL 541	Cell Biology	3
BIOL 545	Human Parasitology	3
BIOL 546	Human Parasitology Lab (lab course)	1
BIOL 604	Biology of Fungi (lab course)	3
BIOL 625	Animal Parasitology (lab course)	4
BIOL 671	Immunology Lab (lab course)	2
BIOL 676	Molecular Genetics Laboratory (lab course)	3
BIOL 687	Microbial Ecology	3
BIOL 698	Problems in Biology (lab course)	1–3
BIOL 720	Anaerobic Bacteriology	2
BIOL 730	General Virology	3
BIOL 731	Virology Laboratory (lab course)	2
BIOL 755	Specialized Cell Functions	3
BIOL 760	Genetic Engineering	2
ASI 607	Food Microbiology (lab course)	4
AGRON 645	Soil Microbiology (lab course)	4

By consultation with a Division of Biology advisor a student may choose elective courses from Block C that allow a more specific focus on interest and experience. Areas of specialization would include prokaryotic microbiology, eukaryotic microbiology, biotechnology/genetic engineering, and infectious diseases. The microbiology curriculum coupled with appropriate electives provides an excellent education base for students moving directly into the job market, for students headed toward medical, dental, medical technology, and veterinary programs, and for students going into graduate programs in the biological sciences.

Fisheries and wildlife biology

Students in this major may obtain either the B.A. or B.S. degree. In addition to the requirements of the College of Arts and Sciences, fisheries and wildlife biology majors must take the courses of Block A, Block B, and one of the three options of Block C as shown below. Students who wish to qualify for professional certification as a fisheries or wildlife biologist should consult their academic advisors about any additional courses needed for such certification.

Block A: Courses offered by other departments

SPCH 106	Public Speaking I	3
One math course*		3–4
Chemistry courses**		13
PHYS 113	General Physics I	4
	and	
PHYS 114	General Physics II	4
	or	
PHYS 115	Descriptive Physics	4
CIS 101–104	Applied computer science courses	4
STAT 340	Biometrics I	3
		30–35

*To be selected from among MATH 100, 150, or 220.
**To be fulfilled by CHM 210, 230, 350, and 351 or by CHM 210, 230, and BIOCHM 265.

Students who plan to proceed into graduate programs should take MATH 220; CHM 210, 230, 350, and 351; and PHYS 113 and 114.

Block B: Division of Biology courses

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOL 430	Population Biology	4
BIOL 433	Wildlife Conservation	3
BIOL 529	Fundamentals of Ecology	3
BIOL 632	Ecology Laboratory	1
Plus at least two courses in the Division of Biology (400 level or above) totaling 5 hours or more		5
		25

Block C: Options

Fisheries biology option

STAT 341	Biometrics II	3
BIOL 513	Physiological Adaptations of Animals	3
	and	
BIOL 514	Physiological Adaptations of Animals Lab	1
BIOL 542	Ichthyology	3
BIOL 612	Limnology	4
BIOL 680	Aquaculture	3
BIOL 696	Fisheries Management	4
		21

Wildlife biology option

STAT 341	Biometrics II	3
AGRON 501	Range Management	3
AGEC 525	Natural Resource Economics	3
ENTOM 312	General Entomology	2
	and	
ENTOM 313	General Entomology Lab	1
BIOL 513	Physiological Adaptations of Animals	3
	and	
BIOL 514	Physiological Adaptations of Animals Lab	1
BIOL 543	Ornithology	3
BIOL 544	Mammalogy	3
BIOL 551	Taxonomy of Flowering Plants	4
BIOL 684	Wildlife Management	3
BIOL 685	Wildlife Management Techniques	3
		32

Natural history option

BIOL 551	Taxonomy of Flowering Plants	4
	or	
FOR 330	Dendrology I	2
	and	
FOR 340	Dendrology II	2
BIOL 542	Ichthyology	3
BIOL 543	Ornithology	3
BIOL 544	Mammalogy	3
BIOL 513	Physiological Adaptations of Animals	3
	and	
BIOL 514	Physiological Adaptations of Animals Lab	1
	or	
BIOL 500	Plant Physiology	4
Nine hours of biology electives (400 level or above)		9
		26

Hours from Block B may not be counted as a part of Block C electives.

Pre-professional curricula

Students preparing to seek admission to veterinary, medical, dental, optometry, physical therapy, medical technology, and other professional schools may major in biology (or another discipline) provided the specific pre-professional requirements are met. Students should work with both an appropriate pre-professional advisor in the College of Arts and Sciences dean's office and a biology advisor to assure the proper planning of an academic program to meet their professional goals.

Students preparing to be biology teachers in secondary education are encouraged to pursue a degree program in the Division of Biology. Students should utilize both an advisor in the College of Education (regarding certification requirements and education courses) and a Division of Biology advisor.

Biology minor

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5

Twelve additional biology hours, eight of which must be numbered at 400 or above.

Undergraduate research

The Division of Biology encourages exceptionally motivated students to participate in biology research, as a way of using information obtained in the classroom. This is especially encouraged for students intending to apply to graduate programs or professional programs following graduation. Students may receive course credit for these activities, which can be used to fill major elective requirements. Opportunities are available in the laboratories of individual faculty members, often with funding provided from research grants obtained by faculty efforts. Students may learn of these opportunities by discussion with faculty members having interests in biology which are similar to their own.

Biology courses

BIOL 107. Biological Science Colloquium. (2) I, II. Offered by TELENET. Topics in biological science chosen to illustrate current research of scientists and methods used to study the biological world. At each offering of this course a syllabus will be available giving the topics to be studied and the details of administration of the course. May be repeated once. Not open to biology majors.

◆BIOL 198. Principles of Biology. (4) I, II, S. An introductory course for majors and nonmajors focusing on plants, animals and microbes. Specific areas covered include biological molecules, cells, genetics, energy flow, physiology, ecology, and evolution. Studio format incorporating lec., lab, and rec. elements in two two-hour sessions per week.

BIOL 201. Organismic Biology. (5) I, II. A study of the structure and function of organisms with special attention paid to the phylogenetic origins of taxonomic groups and the integration of their structural systems. Three hours lec. and four hours lab. Pr.: BIOL 198 or equiv.

BIOL 210. General Botany. (4) I, II. Plant groups and their evolutionary development. Physiology, anatomy, ecology, identification of seed plants, and economic applications. Two hours lec. and six hours lab a week.

BIOL 222. Field Ornithology. (1) II, in odd years. Identification of bird species in the field and the illustration of attributes of avian behavior and ecology. One three-hour lab a week. Pr.: Sophomore standing.

BIOL 240. Structure and Function of the Human Body. (8) I, II. Anatomy and physiology of the organ systems of the human body. Laboratory includes physiology experiments, study of anatomy from human cadavers, dissection experience, x-rays, and slide work. Five hours lec. and two three-hour lab sessions a week. Pr: BIOL 198.

BIOL 303. Ecology of Environmental Problems. (3) II. Principles of ecology and their application to such problems as pollution, human population growth, and land-use planning. Two hours lec. and one hour discussion a week. Pr.: Two courses in natural science.

BIOL 310. Bioethics. (3) II. Discussions of the developments and use of biomedical technology and its social, moral, and ethical impact on the human spectrum from conception to death. Three hours lec. per week. Pr.: Junior standing.

BIOL 320. Economic Botany. (3) I, II. Origin and uses of cultivated plants useful to humans, especially grains, legumes, spices, beverage plants, fibers, and dyes. Pr.: BIOL 198 or BIOL 210.

◆BIOL 330. Public Health Biology. (3) I. Fundamental concepts of human infectious and organic diseases with emphasis on disease etiology and mechanisms, collection of epidemiological data, and the influences upon, and consequences of, governmental public health policy. Two hours lec. and one hour rec. per week. Pr: BIOL 198.

BIOL 365. Practicum in Biology. (1–4) I, II. Experimental approaches to learning biology through teaching. One hour rec. a week plus three to nine hours lab a week. Pr.: Permission of instructor and credit with superior performance in the course in which the student will be involved.

BIOL 397. Topics in Biology. (1–6) I, II, S. Pr.: Consent of instructor.

◆BIOL 399. Honors Seminar in Biology. (1–3) Selected topics. Open to nonmajors in the honors program.

BIOL 400. Human Genetics. (3) I. Principles of Mendelian genetics dealing with inheritance of human traits and the molecular and biochemical bases of those traits. Topics covered include classical genetics, chromosome abnormalities, gene structure and function, quantitative and population genetics of humans, and the implications of scientific and technological innovations on human genetics. Pr.: BIOL 198; CHM 110 or 210; MATH 100.

◆BIOL 402. Eugenics. (2) I. Examination of the development and use of genetic information ranging from that of the nineteenth century to modern molecular genetics. Lectures, discussions, and readings from primary sources with a focus on bioethical considerations of the use of genetic information. Pr.: BIOL 198.

BIOL 404. Biology of Aging. (3) II. An introduction to theories, both physiological and evolutionary, proposed to explain the aging phenomena. Major emphasis on a systems approach, e.g., circulatory, nervous, etc. A coverage of each system includes a review of normal structure and function, age related changes and age related dysfunctions and diseases. Pr.: BIOL 198; and GERON 315 or a second course in biology.

BIOL 410. Biology of the Cancer Cell. (2) I. Current concepts of cancer biology including roles of cell surfaces, cell division, viruses, self-recognition, and chemical carcinogens. Pr.: Two courses in biology.

BIOL 430. Population Biology. (4) I. A study of the patterns and processes of inheritance and of changes in gene frequencies and numbers of individuals in interbreeding populations of individuals. Three hours lec. and one hour rec. Pr.: BIOL 201.

BIOL 433. Wildlife Conservation. (3) II. An introductory course to the fields of fisheries and wildlife conservation, history of the conservation movement, review of important wildlife species, overview of management concepts, and exposure to wildlife-related issues. Pr.: BIOL 201.

BIOL 455. General Microbiology. (4) I, II. Microorganisms; their handling, morphology, growth, and importance. Two hours lec. and four hours lab a week. Pr.: BIOL 198 and one course in chemistry.

BIOL 495. Topics in Biology. (1–6) I, II, S. Pr.: Consent of instructor.

BIOL 496. Honors Tutorial in Biology. (1–3) I, II, S. Individual directed research and study of a topic in biology, normally as a prerequisite to writing a senior honor thesis. May be repeated once to a total of 3 hours credit. Pr.: Sophomore standing, membership in the honors program of the College of Arts and Sciences, and permission of instructor.

BIOL 497. Senior Honor Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

BIOL 500. Plant Physiology. (4) I. Detailed consideration of physiological processes of higher plants. Three hours lec. and three hours lab a week. Pr.: BIOL 201 or 210; and a course in organic chemistry.

BIOL 510. Embryology. (3) II. Developmental anatomy and physiology of reproduction of birds and mammals. Three hours lec. a week. Pr.: BIOL 198.

BIOL 511. Embryology Laboratory. (1) II. One three-hour lab a week. Pr.: BIOL 510 or conc. enrollment.

BIOL 513. Physiological Adaptations of Animals. (3) I. Integration of physiological mechanisms as the basis for adaptive responses of animals to different environments. Pr.: BIOL 201; and a course in organic chemistry or biochemistry.

BIOL 514. Physiological Adaptations of Animals Laboratory. (1) I. One three-hour lab a week. Pr.: Conc. enrollment in BIOL 513.

BIOL 515. Behavioral Ecology. (3) II. Study of the social, environmental, genetic, and evolutionary processes that affect animal behavior. Topics include evolution of social organization, spacing and group behavior, mating systems and parental care, sexual selection, communication, aggression, habitat selection, and foraging. Research project required. Pr.: BIOL 201.

BIOL 529. Fundamentals of Ecology. (3) I. Ecosystem structure and function including energy flow; biogeochemical cycling; effect of climate, soil, fire, succession; application to land management practices. Three hours lec. a week and optional field trips. Pr.: BIOL 201 or 210; and CHM 210.

BIOL 530. Pathogenic Microbiology. (3) I. Etiology and descriptions of major infectious diseases of humans within the perspective of host defenses. Two hours lecture and one hour laboratory-demonstration a week. Pr.: BIOL 455.

BIOL 540. Molecular Biology. (3) I. An introduction to the synthesis and regulation of DNA, RNA, and protein. Mutation and the chromosome are studied at the molecular level. Emphasis is placed on recombinant DNA technology and on the handling of biological information in both higher and lower organisms. Pr.:Two courses in biology and CHM 350.

BIOL 541. Cell Biology. (3) II. Structure and function of cells and subcellular components. A molecular understanding of membranes and cellular physiology will be emphasized. Three hours lec. Pr.: BIOL 540 and CHM 350.

BIOL 542. Ichthyology. (3) II, in even years. Classification, morphology, physiology, distribution, and natural history of fishes. Two hours lec. and three hours lab a week. Pr.: BIOL 201.

BIOL 543. Ornithology. (3) II. Classification, morphology, physiology, distribution, and natural history of birds. Two hours lec. and three hours lab a week. Pr.: BIOL 201.

BIOL 544. Mammalogy. (3) I. Characteristics, evolution, life histories, and ecology of mammals, especially North American game species. Two hours lec. and three hours lab a week. Pr.: BIOL 201.

BIOL 545. Human Parasitology. (3) II. Protozoan and helminth parasites of man with lesser emphasis on ectoparasitic arthropods. Emphasis on life cycles, control, and laboratory diagnosis. Three hours lec. a week. Pr.: BIOL 201.

BIOL 546. Human Parasitology Laboratory. (1) II. Examination of prepared materials and identification of internal parasites of man. Two hours lab a week. Pr.: Conc. enrollment in BIOL 545.

BIOL 547. Herpetology. (2) II, in odd years. Classification morphology, physiology, distribution, and natural history of amphibians and reptiles. One hour lec. and three hours lab a week. Pr.: BIOL 201.

BIOL 551. Taxonomy of Flowering Plants. (4) I. Morphology, taxonomy, and biogeography of the vascular plants. Two hours lec. and two three-hour labs a week. Pr.: BIOL 201 or 210.

BIOL 560. Human Oncology. (3) II in even years. Etiology and pathogenesis of human cancer with emphasis on the biological, biochemical, and molecular mechanisms involved in the multistage process of tumorigenesis and the role of biological, chemical, and physical carcinogens in neoplasia. Three hours lecture per week. Pr.: Two courses in biology and a course in organic chemistry.

BIOL 604. Biology of the Fungi. (3) I. An introduction to fungal structure, function, physiology, ecology, and genetics. Importance of fungi as disease organisms, as saprotrophs, and in industry. Techniques of isolation, cultivation, and as experimental organisms. Two hours lec. and two hours lab a week. Pr.: BIOL 198 or 210.

BIOL 612. Limnology. (4) I, in even years. Basic ecological principles of aquatic environments. Plants and animals of local streams, rivers, ponds, and reservoirs are used to demonstrate the interaction of biological processes with the chemical and physical features of natural aquatic environments. Three hours lec., three hours lab a week; two optional weekend field trips. Pr.: BIOL 201 and CHEM 110 or 210.

BIOL 615. Cytogenetics. (4) I, in even years. Chromosome structure and mechanics, cytotaxonomy, and karyotypic analysis in eukaryotes. Two hours lec. and six hours lab a week. Field trips. Pr.: BIOL 430 or a course in genetics.

BIOL 620. Evolution. (3) II. A study of the theory of evolution including its historical and social implications. Three hours lec. a week. Pr.: BIOL 430 or a course in genetics.

BIOL 625. Animal Parasitology. (4) I, in odd years. Biology and pathology of the principal protozoan, helminth, and arthropod parasites of domestic animals and wildlife. Three hours lec. and two hours lab a week. Pr.: BIOL 198 and junior standing.

BIOL 632. Ecology Laboratory. (1) II. Laboratory and field experiences with ecological problems. Pr.: STAT 340 or equiv., and BIOL 529.

BIOL 645. Advanced Field Studies. (1–2) Offered in intersession only. Different ecosystems and the opportunity to apply classroom knowledge to field biology situations under the guidance of experienced biologists. Pr.: One course in field biology at or above the 400 level.

BIOL 670. Immunology. (4) II. Chemical, genetic, and biological properties of the immune response, acquired immunity, and antibody production. Pr.: Two courses in biology; and a course in biochemistry or equiv.

BIOL 671. Immunology Lab. (2) II. Laboratory exercises in immunology. Pr.: BIOL 670 or conc. enrollment. Three-hour lab a week plus one hour rec.

BIOL 675. Genetics of Microorganisms. (3) I. The genetics of bacteria, viruses, and other microorganisms. Both the use of genetics in microbiological studies and the use of microbial systems to investigate basic genetic problems will be covered. Pr.: BIOL 455 and 540.

BIOL 676. Molecular Genetics Laboratory. (3) I. An advanced course in the techniques of molecular genetics and recombinant DNA technology. Emphasis will be placed on successful completion of a project that will involve several methods in modern molecular genetics. Some typical methods used in the course include mutagenesis, characterization of mutants, polymerase chain reaction, molecular cloning, and DNA sequencing. One-hour lec. and two three-hour labs. Pr.: BIOL 675 or concurrent enrollment.

BIOL 680. Aquaculture. (3) I, in odd years. Principles and methods of culturing fishes for commercial purposes. Topics of study include: species of fishes used in production; breeding; feeds and feeding of fishes; fish parasites and diseases; environmental requirements; facilities; and potential markets. Two hours lec. and three hours lab a week. Pr.: Two courses in biology, two courses in chemistry, and junior standing.

BIOL 684. Wildlife Management. (3) II. Concepts of managing wildlife with emphasis on North American game species. Applied population dynamics as they relate to management, historical, and recent developments in wildlife management, habitat improvement, and related material. Three hours lec. a week. Pr.: BIOL 430 and 433.

BIOL 685. Wildlife Management Techniques. (3) I. Ecology and management techniques. Two hours lec. and three hours lab a week. Pr.: BIOL 430 and 433.

BIOL 687. Microbial Ecology. (3) II, in odd years. The ecology of aquatic and terrestrial microorganisms in their natural environment. Pr.: BIOL 455.

BIOL 690. Microbial Physiology and Metabolism. (2) II. The study of structure, function, regulation, and intermediary metabolism of bacteria. Pr.: BIOL 455; and BIOCH 521 or 765.

BIOL 691. Microbial Genetics Laboratory. (3) II. Examination of the genetic processes of bacteria. A self-paced experimental regimen emphasizing current methodology employed in mutagenesis, selection, gene transfer, gene analysis, plasmid manipulation, and recombinant DNA technology. Pr.: BIOL 540 and 675. Enrollment limited to 12 students.

BIOL 696. Fisheries Management. (4) I, in even years. Methods of managing fisheries resources; physical and biological survey methods; methods of aquatic environment improvement; fish population manipulation; management of streams, ponds, and lakes. Three hours lec. and three hours lab a week. Pr.: BIOL 433.

BIOL 697. Topics in Biology. (1–6) I, II, S. Pr.: Consent of instructor.

BIOL 698. Problems in Biology. (1–8) I, II, S. Pr.: Consent of instructor.

BIOL 699. Undergraduate Seminar in Biology. (1) I, II. Pr.: Consent of instructor.

BIOL 702. Radiation Safety in the Research Laboratory. (1) I. Principles of radioactive safety and radioisotope handling, licensing procedures, and laboratory techniques. Pr.: BIOL 198 or 555; and CHM 210 or PHYS 113.

BIOL 710. Endocrinology. (3) II, in even years. A survey of the glands of internal secretion in vertebrates with emphasis on mechanisms of control of hormone secretion and mechanisms of hormone action. Pr.: BIOL 198; and a course in organic chemistry or biochemistry.

BIOL 719. Biomembranes. (2) II, in even years. Fundamental concepts in membrane biochemistry. Emphasis on the relationship of membrane structure and function. Includes an introduction to research literature on cellular and model membranes. Reading/discussion format. Pr.: BIOL 541 and BIOCH 521.

BIOL 720. Anaerobic Bacteriology. (2) II, in even years. Study of anaerobic bacteria, anaerobiosis, description of anaerobic techniques, and physiology and biochemistry of anaerobes of the natural environment, including the gastrointestinal tract, and of veterinary, medical and industrial importance. Two hours of lec. a week.Same as ASI 720. Pr.: BIOL 455 and BIOCH 521.

BIOL 730. General Virology. (3) II. Theoretical and experimental basis of virology, with emphasis on the role of the virus as a controlling force in cellular biology; principles of host-virus interactions; introduction to use of mammalian cell cultures as the host for virus propagation. Pr.: Twelve hours of biological sciences, including BIOL 455 and 540; and BIOCH 521 or equiv.; consent of instructor.

BIOL 731. Virology Laboratory. (2) II. An introduction to the techniques used in virus propagation, detection, and quantification. Emphasis will be placed on the methodology used to study virus replication and virus-host cell interactions. One-hour lec. and three-hour lab. Pr.: BIOL 730.

BIOL 736. Cancer Therapy. (3) II, in odd years. Current methods of cancer management with emphasis on the kinetic principles of chemotherapy and radiation therapy; diagnosis; surgical oncology; oncologic emergencies; adverse effects of cancer therapy; and the new therapies; Pr.: BIOL 540 and BIOCH 521 or equiv.

BIOL 740. Anatomy of Higher Plants. (3) II. Structure and development of the various tissues and organs of seed plants. Two hours lec. and one two-hour lab a week. Pr.: BIOL 201 or 210.

BIOL 755. Specialized Cell Functions. (3) I, in even years. *IIn vitro* cell and organ culture techniques as tools for differentiation and specialization studies. Emphasis on mammalian cell culture systems with some study of plant cell culture. Pr.: BIOL 541.

BIOL 760. Genetic Engineering. (2) I. An in-depth coverage of techniques and approaches currently used in gene cloning. Recent papers which describe the application of gene cloning to basic research will be read and discussed. Pr.: BIOL 540.

Chemistry

Peter M.A. Sherwood, Head

University Distinguished Professors Klabunde,* Setser,* and Sherwood;* Professors Hammaker,* Hawley,* Hua,* Maatta,* and Ortiz;* Associate Professor Buszek;* Assistant Professors Aakeröy,* Baures,* Collinson,* Higgins,* Lenhert, Muiño,* and Warmuth,* Instructors Paukstelis and E. Dikeman; Emeriti: University Distinguished Professor Fateley*; Professors Copeland,* Kruh,* McDonald,* Meloan,* Moser,* and Schrenk;* Associate Professor Lanning;* Instructor Weyerts; Assistant Instructor Ohno.

The Department of Chemistry occupies modern laboratory facilities in the Chemistry/Biochemistry Building, the H.H. King Chemical Laboratory and part of Willard Hall. The faculty represents a broad range of interest in the discipline of chemistry. The department offers programs leading to the B.S. and B.A. degrees in chemistry and chemical science. In addition to the undergraduate program, the department offers M.S. and Ph.D. degrees; the graduate program includes approximately 60 students.

The discipline of chemistry is very broad and a training in chemistry provides many different career possibilities. For example, research chemists explore and synthesize new compounds and materials and they invent and characterize new processes. Development chemists translate research findings into products, and they work in areas such as marketing, economics, management, and safety. Chemists are involved in solving chemical problems that range from analysis of environmental aspects of chemicals to the manufacture of chemicals and finished products. Chemists also work in federal- or state-sponsored research activities (trade, foods, roads, fire research, nuclear energy) and environmental protection (water, waste, and drugs), and a variety of educational and teaching activities.

Students often use chemistry degrees as preparation for advanced study in medicine, pharmacy, and other health science areas. Students who plan to become high school science teachers may choose to earn dual degrees in chemistry and education. Numerous other possibilities, such as biochemistry or chemical engineering, exist for dual degrees. For dual degree programs, the requirements of both curricula must be met.

High school preparation

High school students who plan to major in chemistry must have a good background in mathematics and science. Trigonometry and two years of algebra are essential, as are courses in chemistry and physics.

Transfer students

Community college students are encouraged to take a year of general chemistry and a course in quantitative analysis, two to three semesters of calculus, English composition, and speech classes for transfer credit.

Independent study and research

Many chemistry students are engaged in independent study and research, some as early as their first year. Two credit hours of research experience, under the supervision of a faculty member of the student's choice, are required for the B.S. degree in chemistry. A formal, written report describing the research is also required.

General requirements for undergraduate major

Students majoring in chemistry or chemical science must earn grades of C or better in all courses prescribed for these curricula, as outlined below. A total of 120 credit hours are required for graduation. The B.A. program is obtained by following the curriculum for the B.S. degrees with the additional foreign language requirement of the College of Arts and Science.

Chemistry curriculum for the B.S. degree

The preferred curriculum for students preparing for employment as chemists or for graduate study in chemistry is listed below. This curriculum is approved by the American Chemical Society: chemistry option (40–42 hours)†; biochemistry option (45–47 hours)‡.

CHM 220	Chemical Principles I	5
	and	
CHM 250	Chemical Principles II	5
	or	
CHM 210	Chemistry I	4
	and	
CHM 230	Chemistry II	4
	and	
CHM 371	Chemical Analysis	4
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Laboratory	2
CHM 550	Organic Chemistry II	3
CHM 585	Physical Chemistry I	3
CHM 595	Physical Chemistry II	3
CHM 598	Physical Chemistry II Laboratory	2
CHM 566	Instrumental Methods of Analysis	3
CHM 567	Instrumental Methods of Analysis Laboratory	1
CHM 657	Inorganic Techniques	2
CHM 711	Inorganic Chemistry I	3
CHM 712	Inorganic Chemistry II	3
CHM 599	Senior Thesis Research	2
Mathematics (12 hours)		
MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
MATH 222	Analytic Geometry and Calculus III	4
Physics (10 hours)		
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5

† Either CHM 711 or 712 may be replaced with CHM 752 (Advanced Organic Chemistry, 3 credits).

‡ For the biochemistry option, either CHM 711 or 712 may be replaced with BIOCH 755, 756, and 765 (Biochemistry I, Biochemistry I Lab, and Biochemistry II, 8 credits). CHM 657 may be taken for 1 or 2 hours under this option.

Chemical science curriculum for the B.S. degree

The chemical science curriculum serves students who want a strong background in science but not as much specialization in chemistry as provided by the B.S. degree in chemistry.

Chemistry (25–27 hours)		
CHM 220	Chemical Principles I	5
	and	
CHM 250	Chemical Principles II	5
	or	
CHM 210	Chemistry I	4
	and	
CHM 230	Chemistry II	4
	and	
CHM 371	Chemical Analysis	4
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Laboratory	2
CHM 550	Organic Chemistry II	3
CHM 566	Instrumental Methods of Analysis	3
CHM 567	Instrumental Methods of Analysis Laboratory	1
CHM 500	General Physical Chemistry	3
	or	
CHM 585	Physical Chemistry I	3
Biochemistry (5 hours)		
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Laboratory	2
Mathematics (8 hours)		
MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
Physics (8 hours)		
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4

Chemistry minor

CHM 220	Chemical Principles I	5
	and	
CHM 250	Chemical Principles II	5
	or	
CHM 210	Chemistry I	4
	and	
CHM 250	Chemistry II	4
	and	
CHM 371	Chemical Analysis	4
CHM 350	General Organic Chemistry‡	3
CHM 351	General Organic Chemistry Lab§	2
CHM 500	General Physical Chemistry#	3
		18 or 20

‡CHM 531 (Organic Chemistry I, 3 credits) may be substituted for CHM 350.

§CHM 532 (Organic Chemistry Lab, 2 credits) may be substituted for CHM 351.

#CHM 585 (Physical Chemistry I, 3 credits) may be substituted for CHM 500.

Introductory and general chemistry courses

CHM 111. General Chemistry Laboratory. (1) I, II, S. A laboratory course to supplement the material of CHM 110. Three hours lab a week. Pr.: CHM 110 or conc. enrollment.

CHM 195. Approved Techniques in Criminalistics. (3) Intersession only. Physical evidence at a crime scene and its examination in the laboratory. Soils, glass, hair fibers, drugs, explosives, poisons, castings, inks, and arson and rape situations are investigated.

CHM 200. Undergraduate Seminar in Chemistry. (0,1) I, II. Programs and activities of interest to students in chemistry, including lectures given by chemistry majors.

◆CHM 210. Chemistry I.* (4) I, II, S. First course of a two-semester study of the principles of chemistry and the properties of the elements and their compounds. Three hours lec. and three hours lab a week. Pr.: One year of high school chemistry and MATH 100 (or two years of high school algebra).

Students entering the university with Advanced Placement chemistry examination credit may earn the following grades:

Score	*Grade*
5	*A in Chemistry I and* *A in Chemistry II*
4	*A in Chemistry I and* *B in Chemistry II*
3	*B in Chemistry I*

Students may also earn 4 hours of credit with grade for CHM 210 by taking a comprehensive examination given by the instructor during the first week of the semester. In the fall semester, the Department of Chemistry may offer an accelerated course that replaces CHM 210 and CHM 230 for students with a good high school background training in chemistry.

In the fall semester, the Department of Chemistry conducts an accelerated program that provides the opportunity for students with good preparation in high school chemistry to earn credit in both CHM 210 Chemistry I and CHM 230 Chemistry II. Credit in Chemistry I is earned through satisfactory performance on a review examination and completion of a special laboratory of three hours per week. Credit in Chemistry II is earned through a special lecture program. For assignment to this program, a student should have a probability of at least 90 percent for earning a grade of C or better in Chemistry I, as indicated in the Overall GPA Predictions table of the student's ACT profile form.

◆CHM 215. Environmental Science: A Chemistry Perspective. (3) I. An analysis of important technological developments and their impact on society and on the earth's environment; ethical issues raised by technological advances. History, matter and energy, ecosystems, population issues, air pollution, water pollution, hazardous substances, environmental policies, and decision making are discussed. Pr.: CHM 110 or CHM 210.

CHM 220. Chemical Principles I. (5) I. First course of a two-semester study of chemical principles. For students in curricula with a major emphasis in chemistry. Three hours lec. and six hours lab a week. Pr.: High school chemistry (one year) and algebra (one and one-half years).

◆CHM 230. Chemistry II. (4) I, II, S. Second course of a two-semester study of the principles of chemistry and the properties of the elements and their compounds. Three hours lec. and three hours lab a week. Pr.: CHM 210.

CHM 250. Chemical Principles II. (5) II. Continuation of CHM 220, covering the principles of chemistry. Laboratory has emphasis on quantitative chemical analysis. Three hours lec. and six hours lab a week. Pr.: CHM 220.

◆CHM 399. Honors Seminar. (3) Open to students in the arts and sciences honors program.

CHM 497. Research in Undergraduate Chemistry. (1–3) I, II, S. Undergraduate research in the chemical sciences. Pr.: Consent of instructor

CHM 498. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

CHM 499. Problems in Undergraduate Chemistry. (Var.) I, II, S. Problems may include classroom and/or lab work. Pr.: Consent of instructor. May be repeated.

CHM 599. Senior Thesis Research. (1–3) I, II, S. Analytical, inorganic, organic, or physical chemistry. A final written report is required. Pr.: CHM 585 and consent of instructor.

600 or above courses

Unless otherwise stated, all chemistry courses numbered 600 and above require the following minimum prerequisites: CHM 550; CHM 532; CHM 595; and CHM 598.

CHM 600. Scientific Glassblowing. (1) II. The basic techniques of bending, sealing, and blowing glass used to fabricate scientific glassware. Three hours of lab including one lec. demonstration a week. Pr.: Senior or graduate standing in physical sciences.

CHM 601. Safe Chemical Laboratory Practices. (1) I. A general safety course for persons working or teaching in a chemical laboratory. One hour of lec. per week. Pr.: CHM 371 and 350 or equiv.

CHM 700. Practicum in Teaching Chemistry. (1) I. Principles and methods of instruction in laboratories and recitation classes in chemistry, including one semester of supervised experience as an instructor in a chemical laboratory. This is a required course of all graduate teaching assistants in the Department of Chemistry. May be taken only once for credit. Pr.: Senior standing in chemistry.

CHM 799. Problems in Chemistry. (Var.) I, II, S. Problems may include classroom or laboratory work. Not for thesis research. Pr.: Consent of instructor.

Analytical chemistry courses

CHM 371. Chemical Analysis. (4) I. Principles of chemical equilibria and quantitative analysis: gravimetric, titrimetric, spectrophotometric, electroanalytical, and separations methods. Two hours lec. and six hours lab a week. Pr.: CHM 230.

CHM 545. Chemical Separations. (2) II. Principles of modern separation techniques. One hour lec. and three hours lab a week. Pr.: CHM 230 or 371.

CHM 566. Instrumental Methods of Analysis. (3) I. Introduction to theory and practice of electrochemical methods, molecular and atomic spectroscopy, surface science, mass spectrometry, separation methods, and electronics in analytical chemistry. Three hours lec. a week. Pr.: CHM 550 and CHM 500 or CHM 585.

CHM 567. Instrumental Methods of Analysis Laboratory. (1) I. Three hours lab a week. Pr.: CHM 566 or conc. enrollment.

CHM 725. Instrumentation in Chemistry. (3) On sufficient demand. Theory and practice of instrument design for use in chemical research. Study of the flow of energy and information in systems for measurement and control. Two hours lec. and three hours lab a week. Pr.: CHM 566 or consent of instructor.

Inorganic chemistry courses

◆**CHM 650. History of Chemistry.** (2) II, in even years. Traces the beginnings of chemistry from 3500 B.C. to 1920 A.D. Early metallurgy, Greek thought about atoms, alchemy, atomic theory, discovery of gases; definition of elements, chemical bonds, organic, inorganic, and physical chemistry. Pr.: CHM 585.

CHM 657. Inorganic Techniques. (1–2) II. The preparation, characterization, and study of transition metal, main group, and organometallic compounds using techniques commonly encountered in industrial and academic research. Three to six hours lab a week. Pr.: CHM 585.

CHM 711. Inorganic Chemistry I. (3) I. Atomic and molecular structure, bonding concepts used in the practice of inorganic chemistry. Applications of symmetry and group theory to structure, bonding, and spectra. Three hours lec. a week. Pr.: CHM 550, 595.

CHM 712. Inorganic Chemistry II. (3) II. Structure, reactivity, and mechanistic aspects of main group and transition metal complexes. Organometallic reactions, catalysis, and bioinorganic chemistry. Three hours lec. a week. Pr.: CHM 550, 595.

Organic chemistry courses

CHM 350. General Organic Chemistry. (3) I, II, S. A survey of types of organic reactions important to biological science, including pre-veterinary and certain agriculture and human ecology programs. Conc. enrollment in CHM 351 is urged. Three hours lec. a week. Pr.: CHM 230.

CHM 351. General Organic Chemistry Laboratory. (2) I, II, S. One five-hour lab and one hour of lec. a week. Pr. or conc. enrollment: CHM 350.

CHM 531. Organic Chemistry I. (3) I, II. General principles of organic chemistry; study of the main types of aliphatic compounds, with an introduction to fats, carbohydrates, amino acids, proteins, and aromatic compounds. Required for chemistry curricula and for entrance to medical schools. Three hours lec. a week. Pr.: CHM 230 or 250.

CHM 532. Organic Chemistry Laboratory. (2) I, II. One five-hour lab and one hour of lec. a week. Pr.: CHM 550 or conc. enrollment.

CHM 550. Organic Chemistry II. (3) I, II. Continuation of CHM 531, including additional aromatic chemistry, condensation reactions, and introduction to advanced topics, such as dyes, polymers, and heterocyclic chemistry. Three hours lec. a week. Pr.: CHM 531.

CHM 551. Advanced Organic Laboratory. (2) I, II. One five-hour lab and one hour of lec. a week. Pr.: CHM 550 and 532.

CHM 752. Advanced Organic Chemistry. (3) I. Advanced study of organic compounds and fundamental types of reactions. Three hours lec. a week. Pr.: CHM 550 and 595.

Physical chemistry courses

CHM 500. General Physical Chemistry. (3) II. Elementary principles of physical chemistry. Three hours lec. a week. Pr.: CHM 350 or CHM 531 and MATH 211 or MATH 221, and PHYS 114 or equivalent.

CHM 585. Physical Chemistry I. (3) I. Elementary chemical thermodynamics and kinetic theory of gases. Three hours lec. a week. Pr.: CHM 250 or CHM 371, MATH 222, PHYS 214, and CHM 531.

CHM 586. Physical Chemistry I Laboratory. (2) I. Six hours lab a week. Pr.: CHM 250 or CHM 371, CHM 585 or conc. enrollment.

CHM 595. Physical Chemistry II. (3) II. Elementary quantum chemistry, spectroscopy, statistical thermodynamics, and chemical kinetics. Three hours lec. a week. Pr.: CHM 585.

CHM 598. Physical Chemistry II Laboratory. (2) II. Six hours lab a week. Pr.: CHM 250 or CHM 371 and CHM 595 or conc. enrollment.

Economics

James F. Ragan,* Head

Professors Babcock,* Nafziger,* Ragan,* and Thomas;* Associate Professors Akkina,* Bratsberg,* Cassou,* Chang,* Gormely,* McNulty,* Oldfather, Olson,* and Weisman;* Assistant Professors Lu,* Sadler,* and Stock;* Instructor Trenary.

Economics deals with the principles governing the production and distribution of goods and services, the best use of resources, and the causes of economic prosperity, depression, growth, and inflation. Students may pursue specialized study in economic theory, econometrics, economic development, economic fluctuations, economic systems, environmental economics, industrial organization, international trade, labor economics, managerial economics, monetary theory and policy, public finance, regional economics, and transportation economics.

A student majoring in economics may earn either the bachelor of arts or the bachelor of science degree.

Requirements

Requirements for an economics major for either the B.A. or B.S. degree are:

ECON 110	Principles of Macroeconomics	3
ECON 120	Principles of Microeconomics	3
ECON 510	Intermediate Macroeconomics	3
ECON 520	Intermediate Microeconomics	3
	or	
ECON 521	Intermediate Micro Theory	3
ECON 580	Senior Seminar in Economics	3

Five additional economics department courses at the 500 level or above (except ECON 505, 506, and 523).

Two courses in statistics. One course must be an introductory course: STAT 320, 330, 340, 350, 510, 702, or 703. The other course must be STAT 351, 511, or 705.

Either MATH 205 (General Calculus and Linear Algebra) or MATH 220 (Analytic Geometry and Calculus I).

To graduate, a student must receive a grade of **C** or higher in Intermediate Macroeconomics and Intermediate Microeconomics. In addition, a student must either (a) receive a grade of **C** or higher in all other 500-level or higher economics courses used to satisfy the degree requirements or (b) have a GPA of at least 2.50 in all economics courses used to satisfy the degree requirements.

Courses taken A/Pass/F may not be used to fulfill these requirements.

Students interested in graduate study in economics should take MATH 220 and 221. Additional courses in calculus, matrix algebra, and statistics are also recommended. Early counsel with an advisor is encouraged.

Secondary major in industrial and labor relations

See the Secondary Majors section of this catalog.

Accelerated undergraduate and graduate programs

Students who begin graduate work after completing the B.A. or B.S. degree generally require more than one year to complete work for a master's degree. However, a five-year program leading to a B.A. or B.S. in economics at the end of four years and a master of arts in economics at the end of five years is available for promising undergraduate students. Students who have completed their sophomore year and have outstanding scholastic records (GPA 3.2 or higher) are invited to join the program.

Each student, in consultation with a faculty advisor, will plan an individualized program of study that meets requirements for the B.A. or B.S. and the M.A. degrees. Features of the program include participation in research as an undergraduate and enrollment in graduate-level courses in the senior year. Students participating in the program will be considered for financial assistance in the form of scholarships, fellowships, research assistantships, and part-time work.

Economics minor

A minor in economics is also available. The requirements are as follows:

ECON 110	Principles of Macroeconomics	3
ECON 120	Principles of Microeconomics	3
Four economics courses at the 500 level or higher (ECON 505 and 506 may not be used to satisfy this requirement)		12
		18

Students must have an overall GPA of 2.0 or higher in courses to satisfy the minor requirements.

Economics courses

◆ECON 110. Principles of Macroeconomics. (3) I, II, S. Basic facts, principles, and problems of economics; determination of the level of employment, output, and the price level; the monetary and banking system; problems and policies of economic instability, inflation, and growth; principles of economic development; other economic systems. Pr.: Probability of a grade of C or higher (PROB ≥ C) of at least 40 percent according to the economics component of the ACT Student Profile, a score of 18 or higher on the Math Placement Exam, or a grade of B or higher in MATH 010.

◆ECON 111. Principles of Macroeconomics—Honors. (3) Course description same as ECON 110. Pr.:Participation in honors program and consent of instructor.

◆ECON 120. Principles of Microeconomics. (3) I, II, S. Basic facts, principles, and problems of economics including study of the determination of prices; the determination of wages, rent, interest, and profit; theory of the firm; monopoly and government regulation; international economic relations. Pr.: Probability of a grade of C or higher (PROB ≥ C) of at least 40 percent according to the economics component of the ACT Student Profile, a score of 18 or higher on the Math Placement Exam, or a grade of B or higher in MATH 010.

ECON 330. Introductory Seminar in Industrial and Labor Relations. (1) II. A multidisciplinary introduction to the field of industrial and labor relations. Examines the economic, legal, psychological, and sociological aspects of the field.

◆ECON 399. Honors Seminar in Economics. (3). For sophomores in honors program—scheduled irregularly. Readings and discussions. Open to students in the honors program not majoring in economics.

ECON 401. Sophomore/Junior Seminar in Economics. (1). I. An introduction to economics as a science and a profession. The course introduces students to the skills and tools that make economics an attractive and enjoyable field as well as an overview of economic data and current debates. Open only to economics majors and those contemplating an economics major. Pr.: ECON 110 and ECON 120.

ECON 499. Seniors Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

ECON 505. Introduction to the Civilization of South Asia I. (3) I. Interdisciplinary survey of the development of civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan; geographical and demographic context, philosophical and social concepts, economic, social and political institutions, literature and historical movements. Same as HIST 505, POLSC 505, SOCIO 505, ANTH 505.

ECON 506. Introduction to the Civilization of South Asia II. (3) II. Interdisciplinary survey of recent and contemporary civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including recent history, current economy, religion, culture, languages and literature, geography, social and political structures and ideas. Same as HIST 506, POLSC 506, SOCIO 506, ANTH 506.

◆ECON 507. The Japanese Economy. (3) II. Analyzes Japan's growth, productivity change, income distribution, government policies, agriculture, industrial structure, labor relations, education and technology, and international trade and finance. Emphases will be on U.S.–Japanese competition and comparisons. Pr.: ECON 110.

ECON 510. Intermediate Macroeconomics. (3) I, II, S. An examination of the behavior of the economy as a whole, including an analysis of the national income account, consumption, investment, money, interest, the price level, the level of employment, monetary and fiscal policy, and economic growth. Pr.: ECON 110; ECON 120 or AGEC 120.

ECON 520. Intermediate Microeconomics. (3) I, II, S. An examination of the theories of consumer behavior and demand, and the theories of production, cost, and supply. The determination of product prices and output in various market structures, and an analysis of factor pricing. Introduction to welfare economics. (Students cannot receive credit for both ECON 520 and ECON 521.) Pr.: ECON 120.

ECON 521. Intermediate Microeconomic Theory. (3) A mathematical approach to intermediate microeconomics. Emphasis is placed on the use of optimization techniques to examine consumer demand, production and cost, behavior of the firm, market structure and welfare. Pr.: ECON 120; MATH 205 or 220.

◆ECON 523. Human Resource Economics. (3) II. An introduction to the economic forces influencing wage and employment determination, income diferentials, unemployment, and the production and acquisition of human capital. Emphasis on public policy, labor unions, and other relevant institutions. Pr.: ECON 120. May not be counted toward economics major.

◆ECON 527. Environmental Economics. (3) II. Economics of environmental market failure and the efficient use of exhaustible and renewable resources. Topics include the application of markets and government policies to greenhouse warming, air and water pollution, and recycling. Pr.: ECON 120.

ECON 530. Money and Banking. (3) I, II, S. Nature, principles, and functions of money; development and operation of financial institutions in the American monetary system, with emphasis on processes, problems, and policies of commercial banks in the United States. Pr.: ECON 110.

ECON 532. Fiscal Operation of State and Local Government. (3) Designed for students who plan careers related to state or local government. Selected topics in state and local taxation and expenditure. Pr.: ECON 110 and permission of instructor.

◆ECON 536. Comparative Economics. (3) II. The transition by Russia, Ukraine, Eastern and Central Europe, and Central Asia to market economics; economic reform in China, India, and other countries; and Marxian critiques of capitalism. Pr.: ECON 110 or 120

ECON 540. Managerial Economics. (3) I, II, some S. Microeconomic topics applicable to understanding and analyzing firm behavior: optimization, demand, estimation, production, and cost theory. Applications to business problems. Pr.: ECON 120, an introductory-level statistics course, and MATH 205.

◆ECON 555. Urban and Regional Economics. (3) I. An examination of the determinants of the economic performance of urban and regional economies, including theory, problems, and policy. Pr.: ECON 120.

ECON 580. Senior Seminar in Economics. (3) I. Topics for class discussion include history of economic thought, research methods in economics, and current economic issues. Students will prepare and present papers written with faculty guidance. Required of all economics majors; open to others with permission of instructor. Pr.: ECON 510 and ECON 520; STAT 351, 511, or 705 or concurrent enrollment in one of the three.

ECON 595. Problems in Economics. (Var.) I, II, S. Individual study is offered in international trade, labor relations, money and banking, public finance, transportation, general economics.

ECON 599. Topics in Economics. (1–3) On sufficient demand. Courses on special topics to be taught on demand. Pr.: To be set for each topics course.

ECON 620. Labor Economics. (3) I, some S. Economics of the labor market—theory and empirical evidence. Labor force composition and trends, labor supply, labor demand, human capital, wage differentials, migration, trade unions, and current issues. Pr.: ECON 520.

ECON 627. Contemporary Labor Problems. (3) Some II. Emphasis on current research and public policies dealing with such matters as full employment, poverty, discrimination, social security, unemployment insurance, health care, minimum wages, training, and education. Pr.: ECON 620 or consent of instructor.

ECON 630. Introduction to Econometrics. (3) I. An introduction to the analytical and quantitative methods used in economics. Applications to specific problems with an emphasis on computer analyses. Pr.: ECON 120; MATH 205 or 220; STAT 351, 511, or 705.

ECON 631. Principles of Transportation. (3) II, some I. Examines the transportation market from the shippers' point of view by examining the impact of transportation on business firm decisions such as location, markets, and prices. Also covers the costs, prices, and service characteristics of railroads, motor carriers, water carriers, oil pipelines and airlines. The role and impact of government in the transportation market is examined from both a promotion and regulation perspective. Pr.: ECON 120 or AGEC 120.

ECON 633. Public Finance. (3) II. Course seeks answers to questions such as: Which goods should be provided by the private sector and which by the public sector (government)? With what criteria are public expenditures evaluated? What is an equitable and efficient tax system? Who bears the tax burden? What aspects of existing taxes need reform? Pr.: ECON 110; ECON 120 or AGEC 120.

ECON 640. Industrial Organization and Public Policy. (3) II. An examination of measures and determinants of industrial concentration, and an analysis of market structure, conduct, and performance, and policies related to performance. Pr.: ECON 120.

ECON 681. International Trade. (3) I, some II, some S. Principles of international trade and finance, including production, exchange, commercial policy, resource movements, balance of payments, foreign currency markets, and policies for internal and external balance. Pr.: ECON 110; ECON 120 or AGEC 120.

ECON 682. Economics of Underdeveloped Countries. (3) I, some S. Factors influencing the economic modernization of the less-developed countries. Emphasis on capital formation, investment allocation, structural transformation, population growth, development planning, and the international economics of development. Pr.: ECON 110.

ECON 686. Business Fluctuations and Forecasting. (3) I. Types of business fluctuations; measurement of business cycles; theories of the causes of business cycles; proposals for stabilizing business activity; techniques of forecasting business activity. Pr.: ECON 110; ECON 120 or AGEC 120.

ECON 690. Monetary, Credit, and Fiscal Policies. (3) II. Goals of aggregative economic policy, conflicts among goals, and measures to resolve conflicts; money markets; targets of central bank control; the relative strength of monetary and fiscal policies; rational expectations hypothesis and policy ineffectiveness debate; term structure of interest rates. Pr.: ECON 530.

ECON 699. Seminar in Economics. (1–3) On sufficient demand. Seminars of special interest will be offered on demand. Pr.: ECON 120.

ECON 720. Microeconomic Theory. (3) I. Demand, cost, and production theories; price and output determination in different market structures; the theory of factor market pricing; an introduction to general equilibrium and welfare analysis. Pr.: ECON 520; MATH 205 or MATH 220.

ECON 735. Mathematical Economics. (3) I. Application of mathematical tools of concrete problems in micro- and macro-economics; mathematical treatment of models of consumption, production, market equilibrium, and aggregate growth. Pr.: ECON 520, MATH 205 or 220, or consent of instructor.

English

Lawrence Rodgers, Head

Professors Dees,* Hedrick,* Heller,* Holden,* Keiser,* Machor,* T. Murray,* and L. Warren;* Associate Professors Brigham,* Brondell,* Conrow,* Dayton,* Dodd,* Donnelly,* Eiselein,* Franko,* Hall,* Kremer,* Nelson,* L. Rodgers,* Smit,* Ward,* and Wood;* Assistant Professors Hauck,* Hubler,* Janette,* Phillips,* Potts,* Sigler,* and Wheatley;* Instructors Baker, M. Clark, Cokinos, Dillon, Friedmann, Kolonosky, Mosher, D. Murray, Rankin, Ransom, S. Rodgers, Seltzer, Stroupe, and A. Warren; Emeriti: Professors Eitner, Gillespie, Johnston, McCarthy, Moses, Noonan, Nyberg, Rees, and M. Schneider; Associate Professors Adams, Ansdell, Cohen, Geissler, Grindell, and H. Schneider; Assistant Professor Glenn; Instructors Bergman, Bussing, Clark, Frazier, Pelischek, Rochat, and Vance.

Bachelor of arts

Students may elect to earn a B.A. in the department through a course of study based on one of the following three patterns.

Note: Students must achieve a C or better in ENGL 252 for the course to count for major credit.

Literature track

ENGL 252	Introduction to Literary Studies	3
One Shakespeare course		3
One language course (430, 476, 490)		3
Two "Survey" courses in one national literature (361 and 362 or 381 and 382)		6
Three English courses numbered 320-599		9
Four English courses numbered 600 and above		12
		36

Students must take at least 6 hours of American literature and 6 hours of British literature other than Shakespeare. At least 15 of the 21 hours in courses numbered 320 and above must be literature courses.

Literature and creative writing track

ENGL 252	Introduction to Literary Studies	3
One Shakespeare course		3
One language course (430, 476, 490)		3
Any two "Survey" courses		6
ENGL 410	Introduction to Creative Writing	3
Three advanced creative writing courses in at least two genres		9
Two literature courses numbered 600 and above		6
One course in literature or language numbered 320 and above		3
		36

Students must take at least 6 hours of American literature and 6 hours of British literature other than Shakespeare.

Literature with teaching certification track

ENGL 252	Introduction to Literary Studies	3
One Shakespeare course		3
ENGl 400	Advanced Expository Writing for Prospective Teachers	3
ENGL 430	The Structure of English	3
ENGL 490	Development of the English Language	3
Any two "Survey" courses		6
A world literature course		3
ENGL 545	Literature for Adolescents	3
Three literature courses numbered 600 and above		9
Composition elective		3
		39

Students must take at least 6 hours of American literature and 6 hours of British literature other than Shakespeare.

English minor

ENGL 252	Introduction to Literary Studies	3
Two of the four American and/or British survey courses (choose two: ENGL 361, 362, 381, 382)		6
One language, writing, or composition theory course (choose one: ENGL 300, 395 [when topic is appropriate], 400, 410, 430, 476, 485, 490, 501, 502, 562, 599 [when topic is appropriate], 604, 661, 663, 700, 755, 757, 759, 761, 762, 763, 771)		3
Any three courses ENGL 320 or above (one of these must be a literature course numbered 600 or above)		9
		21

Teacher certification

Students preparing to teach English in high school may adopt either of two programs: the major outlined above, leading to the B.A. degree; or the College of Education major in secondary education, leading to the B.S. degree. Majors desiring certification should consult their advisors in both the English department and the College of Education.

For specific certification requirements in secondary education, see the College of Education section of this catalog.

English courses

ENGL 030. Writing Laboratory. (1–4) I, II, S. Credit/No Credit. Laboratory practice in writing for all students who need review in fundamentals of composition. Especially for students who have difficulty in meeting standards in Expository Writing I and II, but also designed to assist students who desire to improve their composition skills. Hours are not applicable toward degree requirements. May be repeated up to 6 hours maximum. Pr.: Consent of instructor.

ENGL 035. Special Studies in Intensive English. (2–12) I, II, S. Equivalent to enrollment in one or two segments (structure, writing, reading, or speaking and listening) of Intermediate Intensive English I or II. Placement by the English Language Program according to the student's needs and ability level.

ENGL 036. Beginning Intensive English I. (15) I, II. Introduction to basic English syntax, writing, reading, speaking, and listening for native speakers of other languages. No prior knowledge of English required.

ENGL 038. Beginning Intensive English II. (15) I, II. Intensive study of basic English syntax, writing, reading, speaking, and listening for native speakers of other languages. Pr.: Minimum TOEFL score of 350.

ENGL 040. Intermediate Intensive English I. (15) I, II. Intensive study of basic English sentence structure, writing, reading, speaking, and listening for native speakers of other languages. Pr.: Minimum TOEFL score of 400.

ENGL 050. Intermediate Intensive English II. (15) I, II. Continued intensive study of English structure, writing, reading, speaking, and listening. Placement by the English Language Program.

ENGL 052. Advanced Intensive English. (15) I, II. Advanced intensive study of English writing, reading, speaking, and listening with emphasis on university-level tasks. Placement by the English Language Program.

DAS 060. Summer Intensive English. (10) S. Intensive study of English for native speakers of other languages. Instruction in English language structure, writing, reading, speaking, and comprehension.

ENGL 070. Advanced English as a Second Language. (6) I, II. A support course required of international students whose performance on the English screening test indicates that they would still benefit from half-time instruction in English. Three specialized sections are offered: for undergraduates, for graduate students in technical fields, and for graduate students in non-technical fields. Placement by the English Language Program or on the recommendation of an advisor.

ENGL 075. English for International Students. (3) I, II. Distinguished from DAS 060 by being a nonintensive, 3-hour university support course. English structure, reading, and writing for graduate or undergraduate nonactive speakers who wish to reduce a written language deficiency or to prepare for Composition I. Required of students who do not pass the Written English Proficiency Test. Students may also be admitted on recommendation of their advisor. Repeatable if necessary.

Introductory courses not for major credit, except for the required ENGL 252. Repeatable once (where indicated) with change of syllabus.

ENGL 100. Expository Writing I. (3) I, II, S. Introduction to expressive and informative writing. Frequent discussions, workshops, and conferences. Offers extensive practice in the process of writing: getting ideas, drafting, analyzing drafts, revising, and editing.

ENGL 110. Honors English I. (3) I, II, S. Critical reading and writing for first-year students with high ACT scores. Students may also be admitted at the discretion of the director of expository writing program. Each individual section will concentrate on themes determined by the instructor.

ENGL 125. Honors English II. (3) I, II, S. Advanced critical reading and writing. Students who receive A in ENGL 100 may, on the recommendation of their instructor and the director of the expository writing program, be admitted. Students who are members in good standing of one of the various college honors programs may also be admitted. Otherwise, admission is on the same basis as that for ENGL 110. Each individual section will concentrate on themes determined by the instructor.

ENGL 150. English Studies Abroad. (2–3) Intersession only. Travel abroad, with selected readings, lectures, and discussions which explore the relationships between literary texts and their physical and cultural environments.

ENGL 200. Expository Writing II. (3) I, II, S. Introduction to writing persuasively and in response to literature. As with ENGL 100, uses discussions, workshops, and conferences, and emphasizes the writing process. Pr.: ENGL 100 or 110 and sophomore standing.

ENGL 220. Fiction into Film. (2) I, II, S. Discussions of film adaptation of works of literature.

ENGL 230. Humanities: Classical Cultures. (3) I, II, S. As do the following three courses (ENGL 231-234), develops an understanding, appreciation, and enjoyment of the humanistic resources of Western culture by examining great works of literature, philosophy, art, music, and religion in each major period. The four courses may be taken individually and in any order.

ENGL 231. Humanities: Medieval and Renaissance. (3) I, II, S.

ENGL 233. Humanities: Baroque and Enlightenment. (3) I, II, S.

ENGL 234. Humanities: Modern. (3) I, II, S.

ENGL 251. Introduction to Literature. (3) I, II, S. Study of form and technique in works of fiction, poetry, and drama.

ENGL 252. Introduction to Literary Studies. (3) I, II, S. Elements of literary form and style: an introduction to criticism for English majors. Intended as a first course in the analysis of form and technique, an introduction to literary terms commonly used in later courses, and practice in critical writing. Readings from a broad range: poems, plays, essays, and novels.

◆**ENGL 261. British Literature: Medieval and Renaissance.** (3) I, II, S. Major works to about 1700, selected for the general student, emphasizes Chaucer, Shakespeare, and Milton. Will not apply to survey requirement for English majors.

◆**ENGL 262. British Literature: Enlightenment to Modern.** (3) I, II, S. Major works since about 1700, selected for the general student. Will not apply to survey requirement for English majors.

◆**ENGL 271. American Literature: Colonial through Romantic.** (3) I, II, S. Major works selected for the general student. Will not apply to survey requirement for English majors.

◆**ENGL 272. American Literature: Realists and Moderns.** (3) I, II, S. Major works selected for the general student. Will not apply to survey requirement for English majors.

ENGL 280. Selected American Ethnic Literatures. (3) I, II, S. Selected studies in ethnic literatures of the United States, including African, Asian, Hispanic, Jewish, and Native Americans. Repeatable.

◆**ENGL 287. Great Books.** (3) I, II, S. Introduction to world classics from past to present.

◆**ENGL 295. Selected Studies in English.** (1–3) Intersession. Selected studies in literture, language, rhetoric, and cultural studies. Repeatable with change in subject. Pr.: ENGL 100 or 110. May not be used for English major credit.

◆**ENGL 297. Honors Introduction to the Humanities I.** (3) I. Study of selected major works of history, literature, and philosophy of central importance in the Western cultural tradition. Emphasis on classroom discussion and writing interpretive essays. Limited to entering freshmen. Pr.: Consent of instructor. Same as HIST 297, MLANG 297, PHILO 297.

◆**ENGL 298. Honors Introduction to the Humanities II.** (3) II. Continuation of ENGL 297. Pr.: ENGL 297 or consent of instructor. Same as HIST 298, MLANG 298, PHILO 298.

ENGL 299. Honors Topics in English. (3) I, II. Readings and colloquia in selected topics in literature or language. Pr.: Open only to arts and sciences honors program students and to others completing ENGL 100 or 200 and 110 or 125 with a 3.5 GPA.

Courses for major credit (except ENGL 300 and 399)

ENGL 300. Expository Writing III. (3) I, II, S. Advanced practice in writing a variety of expository forms: personal essays and informative and persuasive reports. Additional work on style and the demands of various rhetorical situations. Pr.: ENGL 125 or 200.

ENGL 320. The Short Story. (3) I, II, S. Study of short stories from world literature with emphasis on American, British, and Continental.

ENGL 330. The Novel. (3) I, II, S. Novels selected from various periods and cultures. Concern for form and critical analysis.

ENGL 340. Poetry. (3) I, II, S. Close reading of poems and analysis of poetic genres, with emphasis on modern poetry.

ENGL 345. Drama. (3) I, II, S. Study of drama from classical times to the present.

ENGL 350. Introduction to Shakespeare. (3) I, II, S. Study of representative comedies, histories, and tragedies.

ENGL 355. Literature for Children. (3) I, II, S. Survey of literature for children. Emphasizes the reading and evaluating of books for children. For teachers of elementary grades. Pr.: Sophomore standing.

ENGL 361. British Survey I. (3) I, II, S. English literature from Anglo-Saxon times through Milton. Will apply to survey requirement for English majors.

ENGL 362. British Survey II. (3) I, II, S. English literature from Dryden to the end of the nineteenth century. Will apply to survey requirement for English majors.

ENGL 381. American Survey I. (3) I, II, S. American literature from the early accounts of colonization through the American Renaissance. Will apply to survey requirement for English majors.

ENGL 382. American Survey II. (3) I, II, S. American literature from the Civil War to the present. Will apply to survey requirement for English majors.

◆**ENGL 390. Fable and Fantasy.** (3) I, II, S. Study of modern works in the fabulous or fantastic modes in relation to the traditions underlying them. Pr.: ENGL 100 or 110.

ENGL 395. Topics in English. (1–3) I, II, S. Selected studies in literature and language. Repeatable with change in topic.

◆**ENGL 399. Honors Seminar in English.** (1–3) Readings and colloquia in selected masterpieces. May not be used for English major credit. Pr.: Honors students only.

Courses for major and nonmajor credit

ENGL 400. Advanced Expository Writing for Prospective Teachers. (3) I, II, S. Expository writing and a brief introduction to the history and theory of teaching writing, primarily for candidates for Secondary certification in English. Pr.: ENGL 125 or 200.

ENGL 415. Written Communication for Engineers. (3) I, II, S. Study and intensive use of writing forms characteristic of professional practice. Pr.: Enrollment in the College of Engineering with junior or senior standing and ENGL 100 or equivalent with A or B credit or ENGL 200.

◆**ENGL 420. Literature and Film.** (3) I, II, S. Emphasizes such matters as the turning of a story, novel, play into film; the handling of point of view; the interrelating of techniques between fiction and film; and the comparing of the forms of fiction and film. Pr.: ENGL 125 or 200.

ENGL 430. The Structure of English. (3) I, II, S. Systematic study of the structure of the English language and a consideration of the current theories of analysis: traditional, structural, and transformational-generative. Primarily for candidates for secondary certification in English or for elementary language arts majors. Pr.: ENGL 125 or 200.

ENGL 440. Themes in Literature. (1–3) I, II, S. Explores the literary treatment of important and recurring themes. Repeatable once. Pr.: ENGL 125 or 200.

ENGL 445. Literary Kinds. (1–3) I, II, S. Examines the characteristics, the growth and development, or the uses of specified literary genres. Repeatable once. Pr.: ENGL 125 or 200.

◆**ENGL 450. Literature and Society.** (1-3) I, II, S. Literature in relation to social and cultural patterns and influences. Repeatable once. Pr.: ENGL 125 or 200.

ENGL 461. Introduction to Fiction Writing. (3) I, II, S. A practical introduction to short fiction writing. Pr.: ENGL 125 or 200.

ENGL 463. Introduction to Poetry Writing. (3) I, II, S. A practical introduction to poetry writing. Pr.: ENGL 125 or 200.

ENGL 470. English Bible. (3) I, II, S. The Bible as literature and history and the cultural and historical backgrounds of the Old Testament. Pr.: ENGL 125 or 200.

ENGL 476. American English. (3) I, II, S. A systematic study of the English language as it has been and is spoken in the continental United States. Topics may include Tall Talk, Americanisms, Colonial and Modern dialects, and American dictionaries. Pr.: ENGL 125 or 200.

ENGL 485. Introduction to History and Theory of Composition and Rhetoric. (3) I, II, S. Introduction to primary issues and representative writers on rhetoric from ancient Greece and Rome to the present. Emphasizes the relationship of such material to writing instruction in Western civilization. Pr.: ENGL 125 or 200.

ENGL 490. Development of the English Language. (3) I, II, S. Depicts the English language in its place among other world languages, and introduces students to the major ways in which English has changed through time. Considers both internal and external influences as causes of language change. Pr.: ENGL 125 or 200.

ENGL 492. Humanities Seminar. (3) I, II. Study in depth of selected major figures and movements in Western arts, ideas, and literature. Offered each semester within one of the chronological periods of the introductory courses. Pr.: Appropriate introductory humanities course (or an equiv. background, such as courses in Western civilization, art, or world literature, with consent of instructor).

ENGL 497. Special Investigations in English. (Var.) I, II, S. Individual investigation in authors, genres, periods of literature or language. Pr.: Background of preparation needed for investigation undertaken.

ENGL 498. Honors Tutorial in English. (1–3) I, II, S. Individually guided study in which the student will formulate and explore a narrowly defined topic in literature or language. May be used to initiate research for senior honors thesis. Pr.: Consent of tutorial instructor.

ENGL 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

Undergraduate and graduate credit in minor field

ENGL 502. Writing Literary Non-Fiction. (3) I, II, S. An introduction to the genres of literary non-fiction and practice in writing those forms. Pr.: ENGL 125 or 200.

ENGL 516. Written Communication for the Sciences. (3) I, II, S. Theory and intensive writing practice for students in the basic and applied sciences. Pr.: Junior standing and ENGL 125 or 200. Will not substitute for ENGL 415.

ENGL 525. Women in Literature. (3) I, II, S. Literary works by or about women. Treats writers considered within various traditions, themes, or formal issues. Pr.: ENGL 125 or 200.

ENGL 535. Literature of Aging. (3) I, II, S. Concerned with the problems of and the responses to aging as reflected in fiction, drama, and poetry. Pr.: ENGL 125 or 200.

ENGL 545. Literature for Adolescents. (3) I, II, S. Selecting, reading, and evaluating books for adolescents. For those seeking junior and senior high school certification and students of guidance for adolescents. Pr.: ENGL 125 or 200.

ENGL 562. Playwriting. (3) I, II, S. Theoretical study and practical application of techniques of playwriting with regard to plot, characters, and production; emphasis on the one-act form. Same as THTRE 562.

◆**ENGL 580. Selected World Literature.** (3) I, II, S. This course primarily addresses writing by authors whose native origins lie elsewhere than in Europe or the United States. The content of the course varies from instructor to instructor. The course may examine literature from several countries and regions, concentrate upon literature for one country or region, or focus on a topic which transcends national or regional boundaries. Works studied will have been written in or translated into English. Pr.: ENGL 120 or 125.

ENGL 599. Special Research in English. (Var.) I, II, S. Individual investigation in authors, genres, periods of literature, or language. Background of preparation needed for investigation undertaken.

Undergraduate and graduate credit

ENGL 604. Expository Writing Workshop. (3) I, II, S. Course emphasizes style analysis of modern non-fiction prose in the sciences, social sciences, and humanities. Extensive student writing on assignments appropriate to germane topics. Pr.: Junior standing.

ENGL 605–660. Readings Courses. Readings courses are designed primarily for advanced undergraduates although graduate students may also enroll in them. These courses constitute a sequence of period studies covering the chronological range of English and American literature. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the periods. Each semester's offerings will be specifically described before each enrollment period in university and department publications. The courses require junior standing and are repeatable with change of subject matter.

ENGL 605. Readings in Medieval Literature. (3) I, II, S.

ENGL 610. Readings in Renaissance Literature. (3) I, II, S.

ENGL 620. Readings in Seventeenth Century British Literature. (3) I, II, S.

ENGL 625. Readings in Eighteenth Century British Literature. (3) I, II, S.

ENGL 630. Readings in Nineteenth Century British Literature. (3) I, II, S.

ENGL 635. Readings in Twentieth Century British Literature. (3) I, II, S.

ENGL 640. Readings in Early American Literature. (3) I, II, S.

ENGL 645. Readings in Nineteenth Century American Literature. (3) I, II, S.

ENGL 650. Readings in Twentieth Century American Literature. (3) I, II, S.

ENGL 655. Readings in American Ethnic-Minorities Literature. (3) I, II, S.

ENGL 660. Readings in Major Authors. (3) I, II, S.

ENGL 661. Advanced Creative Writing: Prose Fiction. (3) I, II, S. Advanced writing of prose fiction. Repeatable once. Pr.: ENGL 461 or instructor permission.

ENGL 663. Advanced Creative Writing: Poetry. (3) I, II, S. Advanced writing of poetry. Repeatable once. Pr.: ENGL 463 or instructor permission.

ENGL 670–695. Topics Courses. Topics courses are designed primarily for advanced undergraduates although graduate students may enroll in them. These courses address topics not confined to a single period in a national literature. Specific course content will vary by semester and instructor. It may emphasize cross-national subjects, literary criticism, the development of a theme or genre over time, new perspectives from social, intellectual, or cultural studies, or non-traditional texts and topics. Each semester's offerings will be described more specifically in university and department publications before each enrollment period. The courses require junior standing and are repeatable with change of subject matter.

ENGL 670. Topics in British Literature. (3) I, II, S.

ENGL 680. Topics in American Literature. (3) I, II, S.

ENGL 690. Topics in Literature for the Young. (3) I, II, S.

ENGL 695. Topics in Literature. (3) I, II, S.

ENGL 700. Old English. (3) I, II, S. The elements of Old English grammar, with readings in prose and poetry. Pr.: Instructor permission.

ENGL 705. Theory and Practice of Cultural Studies. (3) I, II, S. An overview of selected approaches to the study of culture and of their current application in English studies, including psychoanalytic, feminist, marxist, and structuralist approaches. Pr.: Junior standing.

ENGL 710–759. Studies Courses. Studies courses are designed primarily for graduate students, although advanced undergraduate students may also enroll in them. Their specific contents will vary by semester and instructor, but the courses will reflect concerns with literary and rhetorical forms and genres; with specific authors, periods, or literary movements; with perspectives from social, intellectual, and cultural studies; or with literary themes; or with language or linguistics. Each semester's offerings will be described more specifically in university and department publications before each enrollment period. The courses require junior standing and are repeatable with change of subject matter.

ENGL 710. Studies in a Literary Genre. (3) I, II, S.

ENGL 720. Studies in a Major Author. (3) I, II, S.

ENGL 730. Studies in a Literary Period. (3) I, II, S.

ENGL 740. Studies in a Literary Theory. (3) I, II, S.

ENGL 755. Studies in Composition and Rhetoric. (3) I, II, S.

ENGL 757. Studies in Language and Linguistics. (3) I, II, S.

ENGL 759. Studies in Technical Communications. (3) I, II, S.

ENGL 761. Creative Writing Workshop: Short Fiction. (3) I, II, S. Advanced writing of short prose fiction. Repeatable twice for credit. Pr.: ENGL 661 or instructor permission.

ENGL 762. Advanced Playwriting. (3) I, II, S. Same as THTRE 762.

ENGL 763. Creative Writing Workshop: Poetry. (3) I, II, S. Advanced writing of poetry. Repeatable twice. Pr.: ENGL 663 or instructor permission.

ENGL 771. Creative Writing Workshop: Novel. (3) I, II, S. Repeatable twice. Pr.: ENGL 661 or instructor permission.

ENGL 795. Literary Criticism. (3) I, II, S. Major points of view in modern American and British criticism, with practice in the analysis and judgment of individual literary works. Pr.: Senior standing.

ENGL 799. Problems in English. (Var.) I, II, S. Independent study in major authors, genres, and periods of English and American literature and language. Pr.: Background of courses needed for problem undertaken.

Linguistics courses

Undergraduate and graduate credit

ENGL 600. Principles of Linguistics. (3) I, II. The scientific study of language, with examples from English, Spanish, French, German, and others. Overview of language origins, phonetics, phonology, syntax, semantics, language acquisition, dialects, language change, and writing systems. Same as LING 600 and LG 600.

ENGL 601. General Phonetics. (3) I or II, in alternate years. Description and classification of speech sounds according to point and manner of articulation. Transcription in the International Phonetic Association Alphabet. Includes sounds of English, French, Spanish, German, and others. Same as LING 601 and LG 601.

ENGL 602. Historical Linguistics. (3) I or II, in alternate years. Internal and comparative reconstruction of earlier forms of languages. Genetic relationships in language families, and various typological considerations. Includes French, Spanish, and others. Same as LING 602 and LG 602.

ENGL 603. Topics in Linguistics. (3) I or II, in alternate years. Seminar on a special topic in linguistics. Topic to be announced for semester in which offered. Repeatable for credit on a different topic. Same as LING 603 and LG 603.

Geography

C.W. Martin,* Interim Head

Professors J. Harrington,* Kromm,* and White;* Associate Professors DeBres,* Martin,* Paul,* and Seyler;* Assistant Professors Goodin* L. Harrington,* and Lu; Adjunct Professors Briggs, Darling, Lulla, Seamon,* and Smith;* Emeriti: Professors Bussing, Self, Siddall, and Stover.*

Geographers study the differences in human activities from one place to another, assess human impacts and responses to the environment, and resolve vital questions about current national and international situations.

Geographers also pursue more theoretical inquiry into the major problems of human society by examining spatial structure and processes using various techniques of mathematical and cartographic analysis of spatial phenomena, computer mapping, geographic information systems, and remote sensing.

A typical and traditional problem in geography concerns human impact on the land. Air pollution, contamination of waterways, decaying urban areas, destruction of the landscape, and the like, can only be well understood by examining the interrelations of factors such as technology, population density, legal structure, affluence, cultural traditions, and environment.

Geography (B.A. or B.S.)

Students of geography may pursue a traditional major in geography, a geography minor, or choose the geography-pre-planning option. The bachelor of science or the bachelor of arts degree may be earned.

Requirements for a major in geography:

GEOG 100	World Regional Geography	3
	or	
GEOG 200	Human Geography	3
GEOG 220	Environmental Geography I	4
GEOG 221	Environmental Geography II	4
GEOG 440	Geography of Natural Resources	3
GEOG 450	Geography of Economic Behavior	3
GEOG 555	Cartography/MicroCAD	3
STAT 330	Elementary Statistics for the Social Sciences (or its equivalent)	3

One course at 500 or 600 level (except GEOG 505, 506, 508, 535, or 555)

One course at 700 level (except GEOG 700,702, 705, 708, 709, or 711)

Additional courses at the 490 level or above to total 30 hours in geography.

Although the major requirements for the B.A. or B.S. degrees are the same, college requirements differ as described earlier in the College of Arts and Sciences section.

Students may pursue a general program in geography, or may choose to develop a concentration in either environmental studies or community studies. Other concentrations may be developed to reflect the particular interests of a student. For example, a student may earn a teaching certificate while working toward a degree in geography.

Another curriculum leads to the bachelor of science degree in secondary education. For information concerning this program see the College of Education section of this catalog.

Geography minor

GEOG 100	World Regional Geography	3
	or	
GEOG 200	Human Geography	3
GEOG 220	Environmental Geography I	4
GEOG 440	Geography of Natural Resources	3
	or	
GEOG 450	Geography of Economic Behavior	3
At least two additional geography courses at the 500 level and above		6
Total credit hours required		**16**

Geography: pre-planning option (B.A. or B.S.)

Geography is an appropriate discipline for students who wish to pursue a career in a planning-related field or desire to take graduate training in planning. The geography pre-planning option provides a broad interdisciplinary background and a core curriculum in geography. Completion of the requirements will also yield a certificate in community planning from the Department of Regional and Community Planning.

The courses for the pre-planning option include all of those required for a geography major, and GEOG 750 Urban Geography, which will count as part of the 30 hours needed for a degree. In addition, students must take:

Select one of the following (3 hours):

GEOG 700	Quantitative Analysis in Geography	3
GEOG 702	Computer Mapping	3
GEOG 705	Remote Sensing/Environment	3

Select one of the following (3 hours):

ECON 555	Urban and Regional Economics	3
POLSC 718	Urban Politics	3
SOCIS 531	Urban Sociology	3

From the Department of Regional and Community Planning (15 hrs.):

PLAN 315	Introduction to Planning **or**	
PLAN 715	Planning Principles	3
PLAN 736	Planning Implementation **or**	
PLAN 770	Planning Law	3
Three additional planning courses		9

Geography courses

◆GEOG 100. World Regional Geography. (3) I, II. Introduction to geography structured on a framework of major world regions and countries. With the regional approach is an explicit discussion of the essential concepts of certain systematic specialties, such as political, social, economic, and urban geography.

◆GEOG 200. Human Geography. (3) I. A geographical assessment of the way human activities shape landscapes throughout the world. The course is especially appropriate for students interested in the social and behavioral sciences.

GEOG 201. Human Geography (Honors). (3) I, in odd years. Spatial aspects of human organization and behavior are examined through selected concepts in modern geography. The course is especially appropriate for students interested in the social and behavioral sciences. Pr.: Membership in arts and sciences honors program.

◆GEOG 220. Environmental Geography I. (4) I, II. A basic physical geography course emphasizing the atmosphere, weather, climate, and the biosphere. Includes human modification of atmospheric conditions, climate change, severe storms, and the association between global climate and plant distributions. Introduces map use, including isopleth and weather maps. Three hours lec. and one two-hour lab a week.

◆GEOG 221. Environmental Geography II. (4) I, II. A basic physical geography course emphasizing the geosphere and hydrosphere, including processes, patterns, and physical background for related issues such as natural hazards and human modification of physical conditions. Introduces remote sensing and the use of topographic maps in environmental study. Three hours lec. and one two-hour lab per week. Pr.: Environmental Geography I.

◆GEOG 300. Geography of Tourism. (3) II. The geography of tourism is concerned with the structure, form, use, and conservation of the landscape as well as with such spatial conditions as the location of tourist areas and the movements of people from place to place. This course addresses such concepts as the economic, environmental, social, and cultural impacts of tourism as well as examining the tourist geography of each of the world's regions, focusing on the major tourist areas.

◆GEOG 310. Geography of Kansas. (3) I. Perceptions of Kansas, and a regional analysis of the state including discussion of climate, landforms, soil, water, and minerals as well as patterns of settlement, population, agriculture, industry, transportation, and urban development.

◆GEOG 399. Honors Seminar in Geography. (2–3) Selected topics. Open to nonmajors in the honors program.

◆GEOG 440. Geography of Natural Resources. (3) I. The distribution, significance, and environmental consequences of world agriculture, fishing, forestry, and mining, emphasizing the principles which account for the spatial variation in the extraction and consumption of natural resources.

GEOG 450. Geography of Economic Behavior. (3) II. The location of manufacturing industries and patterns of commercial activity. Case studies and simulations are used with emphasis on modern concepts of site selection and community development.

GEOG 460. Future Worlds. (3) S. Alternative future distributions of population, pollution, resource depletion, economic development, and human conflict will be treated in lectures and reading, and discussed by representatives of business, politics, religion, and academia.

GEOG 490. Problems in Geography. (Var.) I, II, S. Pr.: Consent of instructor.

GEOG 498. Honors Tutorial in Geography. (1–3) I, II. Individual directed research and study of a topic in geography, normally as a preliminary to writing a senior honors thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the honors program of the College of Arts and Sciences, and permission of the instructor.

GEOG 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honor program.

◆GEOG 500. Geography of the United States. (3) I, in odd years. A regional analysis of the United States with special attention to the historical, political, economic, and social factors which contribute to a real differentiation within the area.

GEOG 505. Introduction to the Civilization of South Asia I. (3) I. Interdisciplinary survey on the development of civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including consideration of the geographical and demographic context, philosophical and social concepts, social and political institutions, literature, and historical movements. Same as ECON 505, HIST 505, POLSC 505, SOCIO 505, ANTH 505.

GEOG 506. Introduction to the Civilization of South Asia II. (3) II. Interdisciplinary survey of recent and contemporary civilization of India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including recent history, current economy, religion, culture, language and literature, geography, social and political structure and ideas. Same as ECON 506, HIST 506, POLSC 506, SOCIO 506, ANTH 506.

GEOG 508. Fundamentals of Geographic Information Systems. (3) I, II. Examination of the major concepts, theories, and operations in geographic information systems (GIS). Topics include: the nature of geo-referenced data, data acquisition, and spatial database management, coordinate systems and maps, data structure, and the basic GIS operations that are available for spatial analysis. The course will consist of two hours of lec. and two hours of lab a week. Pr.: Junior standing.

◆GEOG 535. Fundamentals of Climatology. (3) II. An examination of climatology on global, regional, and local scales, with emphasis on the physical processes and environmental factors that influence and control climate. Climatic change and its impact on human activities are explored. Pr.: GEOG 220 and MATH 100.

GEOG 555. Cartography: MicroCAD. (3) I. Theory and methods of thematic mapping. Features a CAD-based approach to mapping projects including choropleth, isopleth, quantitative and qualitative symbol, and catograms. Students will produce a collection of publication quality graphics. Pr.: STAT 330.

GEOG 620. Geography of Latin America. (3) II, in even years. A broad survey of the physical and human patterns of the Latin American culture area, past and present, with emphasis on the changing landscape features in the successive patterns of human occupancy.

GEOG 640. Geography of Europe. (3) I. People and their environment, their cultures, problems, and prospects in Europe west of the Soviet Union; trends of development as affected by changing political and economic factors.

GEOG 650. Geography of Former Soviet Lands. (3) II, in odd years. Physical limitations, resource potentials, economic capabilities, and political and nationality issues, with particular emphasis on agriculture, manufacturing, urbanization, cultural diversity, and regional development. Pr.: Six hours of social science.

GEOG 680. Seminar in Regional Geography. (1–3) Pr.: Consent of instructor.

GEOG 700. Quantitative Analysis in Geography. (3) II. Quantitative methods employed in modern geographical research. Applications of both statistical and mathematical approaches will be treated. Emphasis will be placed on interpretation and evaluation of techniques employed in spatial analysis. Pr.: One course in statistics.

GEOG 702. Computer Mapping. (3) I. Familiarizes students with computer applications to mapping problems. Students will produce a series of maps on the printer and plotter using prepared programs, and in the process develop computer graphics skills to address problems in a real analysis, planning, and public administration. Pr.: One course in social science and one in natural science and junior standing.

GEOG 705. Remote Sensing of the Environment. (3) I, II. Remote sensing and its application to earth study, especially environmental problems and land use. Course employs both readings and the use of imagery. Two hours lec., two hours lab. Pr.: One course in physical science and one in biological science.

GEOG 708. Geographic Information Systems. (3) II. Examines both theoretical and applied dimensions of geographic information systems (GIS) in the contexts of environmental impact analysis, natural resource inventories, and community development studies. Applications of GIS concepts and procedures will be built around the use of PC Arc-Info, where case studies will be completed by teams of students. Pr.: GEOG 702 or 705.

GEOG 709. Geographic Field Research Techniques. (2–3) S. Explores methods and techniques employed in modern field research. Stresses research design, field data acquisition techniques, and data analysis. Pr.: GEOG 220, 221, and 440.

GEOG 711. Topics in Remote Sensing. (3) II. Examination of a selected remote sensing topic in an area of faculty specialization. Repeatable once with change in topic. Pr.: GEOG 705.

GEOG 715. World Population Patterns. (3) I, in even years. Geographical processes that govern population distributions, growth rates, and migrations. Emphasis on international comparisons and the implications for world society of continued differential growth rates. Pr.: Six hours of social science.

GEOG 718. Geography of Public Lands. (3) II. Overview of public lands systems, including distribution and uses of public lands, with an emphasis on U.S. federal lands. Historic and recent controversies regarding the public lands will be addressed. Seminar course with discussion and independent research components. Pr.: Six hours of social science and junior standing.

GEOG 720. Geography of Land Use. (3) I, in odd years. Critical factors affecting land use, scarcity, and management examined in a regional, national, and global context; land use classification systems and variation of land use patterns. Pr.: Six hours of social science and junior standing.

GEOG 725. Geography of Water Resources. (3) II, in even years. Interpretation and analysis of the physical geography of water and water as a resource. Evaluation of water, emphasizing quality, hazards, institutions, and selected domestic and global issues. Pr.: Six hours of social science and junior standing.

GEOG 730. World Agricultural Systems. (3) II, in odd years. Description and analysis of the spatial distribution of farm systems emphasizing traditional resource systems in the third world. The major objective is to analyze the interrelationships between natural and human elements in farm systems in order to gain an awareness and understanding of the complex issues involved in agricultural change and development. Pr.: Six hours of social science and junior standing.

GEOG 735. Topics in Climatology. (3) I. Examination of a selected climatology topic in an area of faculty specialization. Repeatable once with change in topic. Pr.: GEOG 350.

GEOG 750. Urban Geography. (3) II. A study of geographic principles relating to the distribution, function, and structure of cities; a geographic analysis and classification of urban settlements. Pr.: Six hours of social science or planning.

GEOG 760. Human Impact on the Environment. (3) I. Assessment of human impacts on the natural environment. Surveys changing human impacts on and attitudes towards the environment, and details alteration of water systems, the atmosphere, landforms, plants, and animals. Pr.: Six hours of social science.

GEOG 770. Perception of the Environment. (3) II, in even years. An examination of the way people perceive their geographic environment and the role of perception in spatial behavior. Perceptions of neighborhoods, cities, states, nations, frontier regions, and environmental processes are explored. Pr.: Six hours of social science with one course above the introductory level, and 6 hours of natural science with one course above the introductory level.

GEOG 780. Cultural Geography. (3) II, in even years. A study of the forms of human occupancy of landscapes, with consideration of innovations in the use of the landscape, the origins and dispersals of these innovations, and human attitudes toward the natural environment. Pr.: Six hours of social science.

GEOG 790. Seminar in Cultural-Economic Geography. (1–3) Pr.: Consent of instructor.

Geology

Charles G. Oviatt,* Head

Professors Chaudhuri,* Clark,* Cullers,* Oviatt,* and West;*Associate Professor Archer;* Assistant Professor Hubbard;* Emeriti: Professors Shenkel,* Twiss,* Underwood,* and Walters;* Assistant Professor Riseman;* Adjunct Professors Doveton, Martin,* and Schultze;* Adjunct Assistant Professors Franseen, Maples,* and Watney.*

Geology includes the study of the composition, behavior, and history of the earth and of other members of the solar system. On Earth, geologists focus on interactions within and among the solid earth, hydrosphere, atmosphere, and biosphere. In addition to providing an understanding of the past history of these interactions as a context for future changes, geologists examine the environmental effects of society's actions, including pollution of ground water, surface water, and soil and the development and use of mineral, energy, and water resources.

Geologists operate in two laboratories: the earth itself (field laboratory) and the standard chemical, physical, or biological laboratory. However, geologists cannot control the variables affecting the natural processes operating in the field, as a chemist can control the variables experimentally in a laboratory. Geologists are the observers of processes in operation or already concluded and often must deduce conclusions from incomplete data or by analogy with processes that may be reproduced only in part in a laboratory.

The Department of Geology offers a program of study in geology and cooperates with the College of Education in an earth science program for high school teachers. It also cooperates with the Department of Civil Engineering in a dual degree in civil engineering and geology. For detailed plans of study, consult the head of the department.

Students in geology must have an overall average grade of C (not a C grade in each course) in their geology, other natural science, mathematics, and computer science courses.

Geology option

In addition to the general requirements for the B.A. or B.S. degree, the following must be completed:

GEOL 100	Earth in Action	3
GEOL 102	Earth Through Time	3
GEOL 103	Geology Laboratory	1
GEOL 301	Historical Geology Laboratory	1
GEOL 502	Mineralogy	3
GEOL 503	Petrology	3
GEOL 520	Geomorphology	2
GEOL 581	Paleobiology	4
GEOL 530	Structural Geology	3
GEOL 630	Stratigraphy/Sedimentology	4
GEOL 680	Field Geology	6
Geology electives (two courses at the 600 or 700 level, or one course at the 600 or 700 level and 3 hours of either GEOL 499 Senior Honors Thesis or GEOL 599 Senior Thesis)		6
MATH 220	Analytic Geometry and Calculus I	4
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4

Geology majors should consult their advisors about elective courses to meet their career and educational needs. Computer literacy is essential for all geologists. Departmental advisors can recommend electives for students desiring concentrations in energy and minerals, engineering geology, environmental geology, hydrogeology, sedimentary geology, and geochemistry. Students intending to earn advanced degrees should visit with the departmental graduate advisor concerning entrance requirements of graduate programs.

Minor in geology

GEOL 100	Earth in Action	3
GEOL 102	Earth Through Time	3
GEOL 103	Geology Laboratory	1
GEOL 301	Historical Geology Laboratory	1
GEOL 502	Mineralogy	3
Geology electives (three courses at the 500 level or above, excluding GEOL 512. GEOL 305 may be substituted for one elective)		7–10
Total credits		18–20

Earth science option for high school teachers

In addition to the general requirements for the B.A. or B.S. degree, the teacher certification requirements and the following must be completed:

GEOL 100	Earth in Action	3
GEOL 103	Geology Laboratory	1
GEOL 502	Mineralogy	3
GEOL 520	Geomorphology	2
GEOG 220	Environmental Geography I	4
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
PHYS 191	Descriptive Astronomy	3
BIOL 198	Principles of Biology	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4

See the College of Education section of this catalog for teacher certification requirements.

Dual degree in civil engineering and geology

Engineering students interested in obtaining the stronger geology background to enhance careers in foundation, construction, or environmental engineering may receive a dual degree by completing the B.S. degree requirements in civil engineering, the general requirements for a B.A. or B.S. degree in the College of Arts and Sciences, and the following: GEOL 102, 301, 502, 503, 520, 530, 630, and 680 (see lists above).

Transfer students

In addition to the general instructions to transfer students, students planning to pursue a degree in geology should complete as many of the following courses or their equivalents as possible:

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
ENGL 100	Expository Writing I	3
ENGL 120	Expository Writing II	3
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
SPCH 105	Public Speaking IA	2
GEOL 100	Earth in Action	3
GEOL 102	Earth Through Time	3
GEOL 103	Geology Laboratory	1
GEOL 301	Historical Geology Laboratory	1
PHYS 113	General Physics I	4
PHYS 114	General Physics II	5

Geology courses

◆GEOL 100. Earth in Action. (3) I, II, S. An introduction to the materials making up the earth, and to the internal and surface processes that shape and change our planet. Three hours rec. a week.

GEOL 101. Geology Colloquium. (1–3) I, II. Topics in earth science chosen to illustrate current research of scientists and methods chosen to study the physical universe. At each offering of this course a syllabus will be available giving the topics to be studied and the details of administration of the course. May be repeated once. Not open to geology majors.

◆GEOL 102. Earth Through Time. (3) I, II, S. An introduction to the immensity of geologic time and a review of the historyof the earth and the life upon it. Three hours rec. a week. Pr.: GEOL 100.

◆GEOL 103. Geology Laboratory. (3) I, II, S. Field and laboratory investigation of minerals, rocks, and fossils; use of maps; environmental studies, erosion, transportation, sedimentation. Two hours lab a week. Pr.: GEOL 100, 102, 105, or 125 or conc. enrollment.

◆**GEOL 105. Oceanography.** (3) I, II. The oceans: their boundaries, contents, and processes. Three hours rec. a week.

GEOL 110. Introductory Geology, Honors. (3) I. Survey of earth materials, features, and processes. Higher level of sophistication and challenge than GEOL 100. Three hours rec. a week.

◆**GEOL 115. Environmental Geology.** (3) I, II. Major reservoirs of Earth and the hydrologic cycle; minerals and rocks on the surface and in subsurface environments; minerals and rock-water interactions; compositional variations of waters; surface and ground water pollutions; atmospheric pollutions; waste disposal problems.

◆**GEOL 125. Natural Disasters.** (3) I, II, S. Discussion of geological phenomena such as earthquakes, volcanic eruptions, landslides, and floods, with particular emphasis on their causes, effects, and significance as hazards. Three hours rec. a week.

GEOL 301. Historical Geology Laboratory. (1) II. Field and laboratory investigations of the history of the earth and its fossil record. Three hours lab a week. Pr.: GEOL 102 or conc. enrollment.

GEOL 305. Earth Resources. (3) I, II. Origin and geologic settings of energy, water, and mineral resources. Additional emphasis will be placed upon exploration and development. Pr.: GEOL 100 or GEOG 221.

GEOL 310. Topics in Geology. (1–3) I, II. Seminar discussion of subjects of current interest in geology. Pr.: A course in natural science at the 100 level or higher.

◆**GEOL 399. Honors Seminar in Geology.** (1–3) Selected topics. Open to nonmajors in the honors program.

GEOL 499. Senior Honors Thesis. (1–3) I, II, S. Directed research and preparation of an honors thesis. May be repeated once to a maximum of 3 hours credit. Open only to seniors in the arts and sciences honors program.

GEOL 501. Independent Study in Geology. (1–3) I, II, S. Independent reading; field or laboratory investigations, or both, of geologic problems. Pr.: GEOL 102 and junior standing.

GEOL 502. Mineralogy. (3) I. Crystallography; physical and chemical properties of minerals; descriptive mineralogy. Two hours lec. and three hours lab a week. Pr.: GEOL 100 or 105, 103, and CHM 230.

GEOL 503. Petrology. (3) II. Petrology of igneous, metamorphic, and sedimentary rocks. Two hours lec. and three hours lab a week. Pr.: GEOL 502.

◆**GEOL 506. Geology and Environment.** (3) II. Fluxes of various elements to major reservoirs and residence times of the elements in major reservoirs; origins of surface and ground waters, ocean water, and atmosphere; interactions of hydrosphere, atmosphere, biosphere and lithosphere; changing atmosphere and global warming; cycles of various elements; migration of various pollutants in surface and subsurface environments; medical geology. Pr.: Any one of the following: GEOL 100, 105, 115, GEOG 222, CHM 110, BIOL 198, PHYS 102.

GEOL 510. Geology of Planets. (3) I. Origin, evolution, and surficial geology of the extraterrestrial planets and satellites. Three hours rec. a week. Pr.: GEOL 100.

GEOL 512. Earth Science. (3) II. A critical study of the atmosphere, weather, climate, composition, and processes of the earth; also, the interaction of these in producing the pattern of landforms and human activity. Three hours rec. a week. Pr.: GEOL 100 or GEOG 220 or junior standing.

GEOL 515. Geology of the National Parks. (3) On sufficient demand. Stratigraphy, structure, and geological history that produced the scenery of the national parks. Selected national monuments also will be studied. Pr.: GEOL 100 or 105.

GEOL 520. Geomorphology. (2) I, II. Laboratory exercises in reading and interpreting topographic maps and aerial photographs; field studies of landforms and surficial deposits, with an emphasis on earth-surface processes. One hour rec. and three hours lab a week. Pr.: GEOL 100.

GEOL 530. Structural Geology. (3) II. Mechanics of the earth's crust; origin and interrelation of structures of the earth. Two hours rec. and three hours lab a week. Pr.: GEOL 503.

◆**GEOL 540. Ice Ages and Environmental Change.** (3) I. Studies of the recent geologic past, especially of the last major ice age to the present. Causes of glaciation and climatic change, ways of reconstructing past geologic environmental and geologic environments changes during the time when human civilization developed, including recent historic time. Three hours rec. a week. Pr.: GEOL 100 or GEOG 221.

GEOL 581. Paleobiology. (4) I. Biological principles applied to fossils; introduction to contributions of pro- and eukaryotic organisms, especially algae and marine invertebrates to earth history. Two hours rec. and six hours lab a week. Pr.: GEOL 102 and 503; MATH 220; PHYS 114.

GEOL 599. Senior Thesis. (1–3) I, II. Directed research and preparation of a senior thesis. May be repeated once to a maximum of 3 hours credit. Open only to seniors in geology.

GEOL 602. Mineral Exploration. (3) I, II. Geological, geochemical, and geophysical prospecting techniques and their application in the exploration for metallic mineral deposits. Three hours rec. a week. Pr.: GEOL 503.

GEOL 605. Exploration Geophysics. (3) I. Seismic, gravity, magnetic, and electrical methods used in geophysical exploration for petroleum accumulations and for mineral deposits. Three hours rec. a week. Pr.: PHYS 214; GEOL 530.

GEOL 608. Optical Mineralogy-Petrography. (3) I. Identification of minerals and rocks as crushed fragments and in thin section. Two hours lec. and one four-hour lab a week. Pr.: GEOL 503 and PHYS 214 or 114.

GEOL 610. Sedimentary Geochemistry. (3) I, II. Geochemical principles and processes in deposition and diagenesis of sediments; different chemical pathways in the exogenic cycle. Two hours rec. and three hours lab a week. Pr.: GEOL 503 and MATH 220.

GEOL 611. Hydrogeology. (3) I, II. Origin, geologic occurrence, and migration of subsurface water; laws governing ground water flow and yield of aquifers. Three hours rec. a week. Pr.: GEOL 520.

GEOL 630. Stratigraphy-Sedimentation. (4) II. Description, classification, correlation, chronology, and paleogeography of sedimentary rock systems and the depositional environments in which they formed. Three hours rec. and three hours lab a week. Pr.: GEOL 581.

GEOL 680. Field Geology. (6) S. Geologic mapping projects along the Colorado Front Range using Brunton compass, aerial photographs, topographic maps, and plane table; special problems in stratigraphy, structure, and petrology. Five six-day weeks in the field. Pr.: GEOL 503, 520, and 530.

GEOL 702. Economic Geology. (3) I. Geology and origin of metallic mineral deposits and of some nonmetallic deposits. Three hours rec. a week. Pr.: GEOL 503.

GEOL 703. Economic Geology Laboratory. (1) I. Laboratory activities related to metallic and nonmetallic mineral deposits, including detailed studies of selected deposits. Pr.: GEOL 702 or conc. enrollment.

GEOL 704. Paleoecology. (3) I. Application of biological, physical, and chemical factors in modern marine environments to the quantitative study of the structure and dynamics of fossil populations and communities. Two hours rec. and three hours lab a week. Pr.: GEOL 581.

GEOL 705. Geobiology. (3) II. Discussion and critique of current and classic research in geobiology. Three hours rec. a week. Pr.: GEOL 581.

GEOL 711. Water Resources Geochemistry. (2) II. Geochemistry of ground and surface waters; emphasis on mineralogic and hydrologic controls on inorganic constituents and properties. Two hours rec. a week. Pr.: GEOL 503 or AGRON 705 or 755.

GEOL 712. Advanced Geochemistry. (3) II. Application of chemical principles to igneous, metamorphic systems; emphasis on equilibria, oxidation-reduction, crystal chemistry, and thermodynamics. Three hours lec. a week. Pr.: GEOL 503 and CHM 500 or 585.

GEOL 720. Quaternary Geology. (3) II. Quaternary stratigraphy as the framework for studying the geomorphic, climatic, archaeological, and biological changes of the last two million years, with emphasis on the North American record. Three hours rec. a week and one field trip a semester. Pr.: GEOL 630.

GEOL 730. Petroleum Geology. (3) I, II. Origin, migration, and accumulation of petroleum; stratigraphy and structure of important fields. Three hours rec. a week. Pr.: GEOL 530 and 630.

GEOL 740. Regional Geology. (3) I. Structure and stratigraphy of the major tectonic units of North America. Pr.: GEOL 530, 630.

GEOL 770. Subsurface Methods. (3) II. Principles and applications of subsurface geology. Two hours rec. and three hours lab a week. Pr.: GEOL 530 or conc. enrollment.

GEOL 790. Problems in Geology. (Var.) I, II, S. Work is offered in mineralogy, paleobiology, paleoecology, stratigraphy, structural geology, igneous, metamorphic, and sedimentary petrology, geomorphology, planetary geology, hydrogeology, geochemistry, and isotope geology. Pr.: Background of courses needed for problem undertaken.

History

Donald J. Mrozek,* Head

Professors Frey,* Gray,* Hamscher,* Higham,* Holl,* Jones,* Kren,* Linder,* and McCulloh;* Associate Professors Feyerharm, Knupfer,* Parillo,* and Sherow,* Assistant Professors Breen,* Watson,* Williams,* and Zschoche;* Emeriti: Professors Carey,* Socolofsky,* and Wilcoxon;* Associate Professor Crawford,* Ferguson,* Page.*

The history program appeals not only to majors but to all students seeking a rewarding educational experience. The curriculum includes courses in traditional and nontraditional fields of interest taught by a nationally respected faculty willing to try new and innovative teaching techniques. A program of speakers, seminars, colloquia, and films supplements the curriculum to stimulate student interest in the discipline of history and how it is expressed.

Undergraduate advisors in the history department maintain up-to-date information regarding requirements of graduate and professional schools and relevant course offerings in history and other departments.

Transfer students

Normally the history department will accept transfer credit for history courses taught at accredited institutions of higher education. In the case of students transferring from community colleges, only courses equivalent to those taught at the freshman-sophomore level at K-State (courses numbered HIST 100 through HIST 299) may receive credit for the history major.

History

Students may earn a B.A. or a B.S. in history using one of the following three options:

History major

Requirements for a history major consist of a minimum of 36 hours in history including HIST 101 The Rise of Europe; HIST 102 The Modern Era; and HIST 586 The Junior Seminar. At least 18 hours of those courses must be numbered 300 or above. The courses must be distributed as follows:

I. The 18 hours of courses numbered 300 or above must include a minimum of 6 hours in each of the following two categories:

A. History of nation-states, diplomacy, politics, or military affairs;

B. Social, economic, cultural or agricultural history; history of science, technology, or religion.

II. Courses taken at any level must also include the following chronological and geographical distribution. (Courses taken to fulfill this requirement may also satisfy the requirements in section I above.)

A. Six hours at the 500 level or above in courses whose primary chronological emphasis is prior to 1800;

B. Six hours in U.S. history;

C. Three hours at the 500 level or above in non-Western or non-U.S. history.

Double majors and teacher certification

Students earning double majors may satisfy the requirements with 30 hours in history. The remaining 6 hours will be waived by the completion of an additional major. The required courses and the topical, chronological, and geographical distribution apply to the 30 hours of course work in history.

Students majoring in history may also prepare for teacher certification in social studies at the secondary level. They must meet the same requirements as students earning double majors (30 hours in history rather than 36). They should select their courses in consultation with advisors in both the history department and the College of Education to ensure that they meet the requirements of both programs. (See the College of Education section of this catalog for social science certification requirements.)

Advanced program in history

Certain highly qualified students may elect to define their own programs for the major in consultation with a committee of three faculty members chosen by the student and approved by the head. This program of study should be broadly conceived, not narrowly circumscribed. This option is available to students seeking a B.A. or B.S. degree in history. To enter this program a student must have a grade point average of 3.5 at the end of the freshman year or later, submit two letters of recommendation and a statement of purpose, and receive approval from the undergraduate studies committee.

A student selecting this option must enroll prior to his or her senior year and meet the following minimum requirements:

Write a senior thesis (6 hours credit over one or two semesters);

Pass an oral examination over a specific body of historical knowledge, the scope of which will be defined by the student in consultation with the faculty committee;

Enroll in 30 hours of history courses (24 hours for double majors and teacher education students) including the Junior Seminar to be selected by the student in consultation with the faculty committee. Students are encouraged to supplement regular course offerings with tutorial instruction.

History minor

Requirements for a history minor consist of a minimum of 21 hours in history of which at least 15 must be at the 300 level or higher.

History courses

HIST 100. Introduction to History. (3) I, II. What history is, how it is produced, and what its functions are. Designed for freshmen who want an introductory course which explains the methodology, purposes, and career options of the discipline.

HIST 101. Western Civilization: The Rise of Europe. (3) I, II, S. Major trends in Western history from the beginnings of European civilization to the end of the seventeenth century. The scope of this course includes classical antiquity, the Middle Ages, the Renaissance, the Reformation, and early modern Europe, but chronological and topical emphases vary with individual sections. Required of all majors in history. Pr.: Not open to juniors and seniors except with consent of instructor.

HIST 102. Western Civilization: The Modern Era. (3) I, II, S. Principal developments in Western civilization from the beginning of the eighteenth century to the present. The scope of the course includes the Enlightenment, the French Revolution, the Industrial Revolution, nationalism, imperialism, communism, fascism, and the two world wars, but chronological and topical emphases vary with individual sections. Required of all history majors. Pr.: Not open to juniors and seniors except with consent of instructor.

HIST 103. Overseas European Studies. (2–3) Intersession only, in alternate years. Selected aspects of European history and culture with readings, lectures, and discussions which will relate historical events to places visited.

HIST 105. Western Civilization: The Rise of Europe (Honors). (3) I, in alternate years. Course description same as HIST 101.

HIST 106. Western Civilization: The Modern Era (Honors). (3) II, in alternate years. Course description same as HIST 102.

HIST 200. Topics in History for Freshmen and Sophomores. (1–3) In alternate years. Exploration of the historical dimensions of a particular topic or theme. Topics vary. May be repeated once.

HIST 250. Russian Culture and Civilization. (3) I, in alternate years. Russia's past and present in the light of principle ideologies with emphasis upon fine arts, literature, music, religion, politics, and education. Equal time will be given to the Tsarist and the Soviet periods. Knowledge of Russian language is not required. Same as MLANG 250.

HIST 251. History of the United States to 1877. (3) Includes ethnic, social, military, political, economic, diplomatic, and ideological themes. The chronological emphasis varies with instructor. The aim of the course is to achieve a broad understanding of American civilization to 1877.

HIST 252. History of the United States Since 1877. (3) Ethnic, social, political, economic, and diplomatic history. The goal of the course is to achieve a broad understanding of American civilization since 1877.

◆HIST 297. Honors Introduction to the Humanities I. (3) I. Study of selected major works of history, literature, and philosophy which have been of central importance in the Western cultural tradition. Considerable emphasis is placed on classroom discussion and writing interpretive essays. Limited to entering freshmen students. Pr.: Consent of instructor. Same as ENGL 297, MLANG 297, PHILO 297.

◆HIST 298. Honors Introduction to the Humanities II. (3) II. Continuation of HIST 297. Pr.: HIST 297 or consent of instructor. Same as ENGL 298, MLANG 298, PHILO 298.

HIST 350. Gandhi and the Indian Revolution. (3) II, in alternate years. An introduction to Mahatma Gandhi, his life and career in India, England, and South Africa, his techniques of nonviolent struggle, and the revolution which destroyed the British Empire and created the new countries of India and Pakistan.

◆HIST 399. Honors Seminar in History. (3) Selected topics in history. May be repeated once for credit. Pr.: Membership in honors program or consent of instructor.

HIST 401. Technology, Science, and History. (3) II, in alternate years. A nontechnical historical survey of the more significant interactions of technology and science with life and thought in the Western world.

HIST 459. History of Dance in Its Cultural Setting. (3) II, in alternate years. The study of developments and changes in the style, technique, and purpose of ceremonial and theatrical dancing from the Greeks to the present. Emphasis on the interaction between this art and the total culture—social, religious, artistic, and political—in which it is performed. Pr.: Sophomore standing. Same as DANCE 459.

HIST 498. Senior Thesis. (3–6) I, II, S. May be repeated once to a maximum of 6 hours credit. Pr.: Senior standing.

HIST 499. Senior Honors Thesis in History. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

HIST 503. Overseas European Studies. (2–3) Intersession only, in alternate years. Selected aspects of European history and culture with reading, lectures, and discussions which will relate historical events to the places visited. Pr.: Sophomore standing.

HIST 504. History of Hinduism. (3) I, in alternate years. Examines one of the world's oldest religions from its origins to the present. Covers the fundamental ideas and practices of Hinduism and the development of related religions such as Buddhism, Jainism, and Sikhism. Pr.: Sophomore standing.

HIST 505. Introduction to the Civilization of South Asia I. (3) In alternate years. Interdisciplinary survey of the development of civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including consideration of the geographical and demographic context, philosophical and social concepts, social and political institutions, literature and historical movements. Same as ECON 505, POLSC 505, SOCIO 505, ANTH 505.

HIST 506. Introduction to the Civilization of South Asia II. (3) In alternate years. Interdisciplinary survey of recent and contemporary civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including recent history, current economy, religion, culture, language and literature, geography, social and political structure and ideas. Same as ECON 506, POLSC 506, SOCIO 506, ANTH 506.

HIST 508. Introduction to Modern East Asia. (3) In alternate years. The history of China, Japan, and surrounding countries including the arrival of Europeans in the sixteenth century, reactions to Western imperialism, the rise of nationalism, and revolution. The impact of the two world wars, the era of post war developments, communism in China, democracy in Japan, and the end of Western colonialism are also examined. Pr.: Sophomore standing.

HIST 509. Japan Since 1550. (3) I, in alternate years. Japan from reunification in the sixteenth century through the Tokugawa and Imperial eras to the postwar recovery. Emphasis on understanding modern Japan as the product of traditional culture, the Meiji Restoration, and World War II. Pr.: Sophomore standing.

HIST 510. World War I. (3) I, in alternate years. Examines the origins, events and consequences of the "war to end all wars." The impact and influence of the war on colonialism, imperialism, and popular culture will be discussed. Pr.: Sophomore standing.

HIST 511. Environmental History. (3) I, in alternate years. An introduction to environmental history as an academic specialization through selected reading and topical lectures. The course emphasizes the study of people in nature through time; it stresses people's response to environmental change through three broadly defined periods: pre-industrial, modern industrial, and contemporary. Pr.: Sophomore standing.

HIST 512. Women in European History. (3) I, in alternate years. A study of women in primitive European societies, in preindustrial times, and in the industrial era. Emphasis will be upon the position and role of women within the society. Pr.: Sophomore standing.

HIST 513. Battles and Leaders. (3) I, in alternate years. The course will emphasize military organization, tactics and strategy, generalship and grand strategy, manpower and logistics, and the wartime ramifications of war on land, at sea, and in the air. Pr.: Sophomore standing.

HIST 514. World War II. (3) I, in alternate years. Origins, conduct, and consequence of World War II. Films from the TV series ``The World at War'' form an integral part of the course. Pr.: Sophomore standing.

HIST 515. History of Sport. (3) In alternate years. The historical development of sport (especially in Europe and North America) including the growth of competition, the rise of mass spectator sports, elitism, and the changing function of sport. History of sport as business and history of the relationship between sport and other institutions. Same as KIN 515. Pr.: Sophomore standing.

HIST 516. History of Science I. (3) I, in alternate years. Scientific activity and thought from antiquity to the end of the sixteenth century, with emphasis on Greek, late medieval, and Renaissance science. No background in science required. Pr.: Sophomore standing.

HIST 517. History of Science II. (3) II, in alternate years. Science in the seventeenth and eighteenth centuries, with emphasis on Galileo, Newton, philosophies of science, scientific societies, and developments in the physical, biological, and earth sciences, including the relations of science with technology, medicine, religion, exploration, and the enlightenment. No background in science required. Pr.: Sophomore standing.

HIST 518. Science in the Modern Age. (3) I, in alternate years. Science since the eighteenth century, including major developments in the physical, biological, and earth sciences, and the relations of science to scientific societies, technology, medicine, exploration, religion, and archaeology. No background in science required. Pr.: Sophomore standing.

HIST 519. Science in America. (3) I, in alternate years. A survey of American science from the colonial era to the present, with special attention to the historical context and the role of institutions and government. Some attention to the social problems faced by scientists and their responses to them. Pr.: Sophomore standing.

◆**HIST 520. Death and Dying in History.** (3) I, II, in alternate years. Examines European and American attitudes toward death and dying in various historical periods. Topics include: death and dying in the European Middle Ages and in nineteenth and twentieth century America, the impact of the Nazi Holocaust on modern opinions about death, suicide as a historical problem, the fear of cancer in modern times, and others. Pr.: Sophomore standing.

HIST 521. History of Christianity. (3) I, in alternate years. A history of the Christian religion from the era of Jesus Christ to the present with special emphasis on people and ideas. Pr.: Sophomore standing.

HIST 522. Religion in American History. (3) II, in alternate years. A study of the impact of religion on American culture and of American culture on religion, the Social Gospel and related issues, and the interrelationship of Christianity and politics. Pr.: Sophomore standing.

HIST 523. A History of the Occult and Witchcraft. (3) In alternate years. A study of the history of the occult and witchcraft in Western civilization with special attention to religious, intellectual, and social issues and influences. Pr.: Sophomore standing.

HIST 524. The History of Baseball in American Culture. (3) In alternate years. The history of baseball from its origins in the early nineteenth century to the present, with emphasis on the major leagues and their collateral organizations but also with attention to semi-pro and amateur baseball and to the Old Negro Leagues. The history of the game will be examined in the context of American history with special reference to social issues, politics, religion, literature, music, and the media. Pr.: Sophomore standing.

HIST 525. Colonial America. (3) In alternate years. About 1450 to 1763. Includes the European background of North American colonization, the rivalry for new world empire, seventeenth century English colonial foundations, and development of the various colonial societies. Pr.: Sophomore standing.

HIST 526. The American Revolution. (3) In alternate years. Eighteenth century colonial background of the Revolution and the revolutionary era itself, 1763–1789. Stresses ideological and other causes of the Revolution, the course of the war, its social results, the Confederation and its demise. Pr.: Sophomore standing.

HIST 527. The Early National Period. (3) In alternate years. Foundations of the new nation from the adoption of the Constitution to the conclusion of the War of 1812, approximately 1789–1815. Stresses the contest between Hamiltonians and Jeffersonians for philosophical dominance of institutions; other topics include diplomacy, westward expansion, military developments, the social and intellectual life of the era. Pr.: Sophomore standing.

◆**HIST 529. Civil War and Reconstruction.** (3) I, in alternate years. 1848–1877. Examination of the sectional controversy, the failure of the political system to resolve peacefully the conflict between North and South, the resort to arms, the nature of the post-war settlement. Emphasis is on the attempt of mid-nineteenth-century American leaders to deal with the complex problems of slavery and race. Pr.: Sophomore standing.

HIST 531. The United States in the Twentieth Century. (3) In alternate years. Examines the creation of modern America, 1890 to the present. Emphasis on the social and cultural roots, and political consequences, of Progressivism, World War I, the Great Depression, World War II, the Sixties, and Post-Vietnam America. Pr.: Sophomore standing.

HIST 532. History of American Criminology and Penology. (3) II, in alternate years. The course traces the history of American criminology and penology from colonial times to the present, including the origins of criminology in the Enlightenment, the rise of the penitentiary, nineteenth- and twentieth-century prison reform, the invention of juvenile delinquency, the evolution of criminology from the classical and positive schools to the present, the rise and fall of the medical treatment model for criminals, crime and punishment of women and minorities, the relationship between prisons and schools as institutions of social control, and the debate over capital punishment in America. Pr.: Sophomore standing.

HIST 533. Topics in the History of the Americas. (1–3) In alternate years. Provides instructor and students the opportunity to investigate in detail a particular theme, event, or problem in the history of North, Central, or South America. Topics vary. May be repeated for credit. Pr.: Sophomore standing.

◆**HIST 534. Social History of Medicine.** (3) In alternate years. An exploration of the development of American social thought and practices regarding health care from colonial times to the present. The course stresses changing cultural attitudes toward disease as well as alterations in social practices and institutions related to healing. Special emphasis is given to the institutional development and professionalization of modern medicine. Pr.: Sophomore standing.

HIST 535. Science and Religion in America. (3) II, in alternate years. Explores the interaction between scientific thought and religious belief in America from colonial times to the present. Major topics considered include the European background to the American experience; the Puritan outlook on scientific thought in the colonial period; the American enlightenment and revival experience; the reception of evolutionary thought and the rise of social Darwinism; the impact of social science and the social gospel; the relationship between science and fundamentalism in the twentieth century; and the new physics and new cosmology. Pr.: Sophomore standing.

◆**HIST 536. The American West.** (3) I, in alternate years. Primary emphasis on the nineteenth century when Americans were rapidly spreading across the continent. Also examines the earlier developments of the frontier and considers the twentieth century role of the trans-Mississippi region. Pr.: Sophomore standing.

◆**HIST 537. History of the Indians of North America.** (3) In alternate years. A discussion of Indian-white relations from 1492 to the present. Special emphasis given to federal government policy and the cultural decline of the native people of North America. Also includes an examination of Indian reservations and urban Indians.

HIST 538. The Great Plains. (3) II, in alternate years. Concentration on the one-fifth of North America identified as the Great Plains; the development of that region in historic times. Pr.: Sophomore standing.

HIST 539. African–American History. (3) In alternate years. An overview of the African–American experience from the seventeenth century through the civil rights movement. Emphasizes social, legal, economic, political, and intellectual aspects of black history as well as African–American contributions to American life and culture. Pr.: Sophomore standing.

HIST 540. Women in America, 1600 to the Civil War. (3) II, in alternate years. An overview of the history of American women from the beginning of the European colonization to the Civil War. Women's changing social role and its relation to the major transformations in American culture and society during this period is stressed. Special emphasis is given to ethnic, racial, and class variations among women. Pr.: Sophomore standing.

HIST 542. Women in America, Civil War to the Present. (3) II, in alternate years. An overview of the history of American women from the end of the Civil War to the present. Examine's women's changing role in modern industrial society with special emphasis upon the women's rights movement of both the nineteenth and twentieth centuries. Pr.: Sophomore standing.

HIST 543. The United States and World Affairs, 1776–Present. (3) I, in alternate years. History of U.S. foreign policy since 1776. Stresses the continuity and intellectual foundations of foreign policy. Emphasizes territorial and foreign commercial expansion and America's response to war and revolution in the twentieth century. Pr.: Sophomore standing.

HIST 544. History of U.S.–Soviet Relations Since 1917. (3) II, in alternate years. History of U.S.-Soviet relations since 1917 with emphasis on WWI and the New Diplomacy; from nonrecognition to recognition, 1921–1933; the Grand Alliance and WWII; origins of the cold war; economic and atomic diplomacy; the Cuban missile crisis; and prospects for detente. Pr.: Sophomore standing.

HIST 545. War in the Twentieth Century. (3) In alternate years. Considers the military theory and practice, the technology, and the political and ideological constraints of World Wars I and II, the Spanish Civil War, the Korean War, and the Indochinese wars. Students are to gain an understanding of the varieties of military experience in the twentieth century, including civil wars, "total war," and guerrilla warfare. Pr.: Sophomore standing.

HIST 546. History of American Military Affairs. (3) In alternate years. Deals with the development of military institutions in colonial America and the United States, civil-military relations and conflicts between political constraints and strategic demands, popular attitudes toward the military, and the rise of the military-industrial complex. Pr.: Sophomore standing.

HIST 548. American Business History. (3) In alternate years. The rise and development of the major commercial, financial, industrial, and transportation enterprises in the United States from the colonial period to the present. Emphasizes the gradual specialization of business through the Civil War, the movement from specialization to combination and integration along vertical/horizontal lines, the conglomerate movement, and the development of multinational enterprises after World War II. Pr.: Sophomore standing.

HIST 551. History of Family Violence. (3) Intersession only. Explores the history of family violence in America as a social, cultural, legal, and public policy issue from colonial times to the present. Stress is placed upon the cultural roots and evolution of domestic law. The development of state-controlled social welfare agencies as well as the emergence of the "battered women's movement" is particularly emphasized. Pr.: Sophomore standing.

HIST 552. Studies in American Social History. (3) In alternate years. Exploration in depth of one specific topic in American social history, such as the impact of immigration, the development of cities, the history of labor and the rise of unions, development of the family, of education, or of medicine. Topics vary. May be repeated for credit. Pr.: Sophomore standing.

HIST 553. History of American Culture. (3) II, in alternate years. Main emphasis is on political, religious, and social thought and ideology, 1620 to present. Pr.: Sophomore standing.

HIST 554. History of the South. (3) II, in alternate years. Topical analysis of important issues in Southern history. Compares the plantation myth of popular films with interpretations by important historians. Emphasis on plantation agriculture, slavery, race relations, class, and gender in the Old South. Post-Civil War topics include federal Reconstruction efforts, segregation, economic reform, and the modern Civil Rights movement. Pr.: Sophomore standing.

HIST 555. American Constitutional History. (3) II, in alternate years. Survey of constitutional and legal development from colonial times to the present. English constitutional ideas and the common law in the American colonies, formation of the Constitution, the role of the Supreme Court, development of the modern American legal system, growth of the legal profession, the problem of civil liberties. The course offers insight into the relationship of constitutional-legal institutions to American society. Pr.: Sophomore standing.

HIST 557. History of American Agriculture. (3) In alternate years. Concentrates on the period since 1850 in an attempt to acquaint the student with the political and economic history of American agriculture. No attempt will be made to present the scientific or technological side of agriculture in detail, but agriculture will be shown in relation to the life of the entire United States. The life of the farmer and his family, the relationship between agricultural changes and other parts of the economy will be part of this course. Special attention will be paid to agriculture in Kansas and the Great Plains. Pr.: Sophomore standing.

HIST 558. History of Kansas. (3) I, II. Land, people, and cultural developments in Kansas, from the earliest written records to the present. Provides the student with an intimate understanding of the state of Kansas. Pr.: Sophomore standing.

HIST 560. Latin American Nations. (3) In alternate years. Survey of economic, social, and political developments of the Latin American nations from independence to the present decade with emphasis on Argentina, Brazil, Peru, Chile, and Mexico. Stresses reform and revolution of the last 50 years. Pr.: Sophomore standing.

HIST 561. Colonial Hispanic America. (3) In alternate years. Iberian and indigenous American background, exploration, conquest, settlement, and development of Latin America. Stresses growth of mestizo culture, colonial styles of living, and wars of independence. Pr.: Sophomore standing.

HIST 562. Modern Mexico. (3) In alternate years. Brief survey of lines of national development, 1821–1910, and major emphasis on the twentieth-century revolution and its reforms (1910–1940) as well as its subsequent implications. Pr.: Sophomore standing.

HIST 563. Topics in Comparative History. (1–3) In alternate years. Investigation in detail of a particular theme, event, or problem in comparative history. Topics vary. May be repeated once for credit. Pr.: Sophomore standing.

HIST 564. The Russian Revolutions and the Soviet System. (3) In alternate years. Russia's industrial revolution and its deepening crisis to the present. Emphasis on prospects for constitutional monarchy and a liberal parliamentary order from the revolution of 1905 to 1914, World War I and the February Revolution, social democracy and the roots of Leninism, Bolshevizing Soviet society under war, Communism and the NEP, Stalinism: fulfillment or betrayal of Leninism, the Great Patriotic War and the emergence of the Soviet empire, and de-Stalinization: prospects for the Soviet system. Pr.: Junior standing.

HIST 565. History and Culture of Greece. (3) In alternate years. The rise of civilization in the ancient Near East, the migrations of the Greeks and the Heroic Age, the Greek city-states, commerce and colonization, the Persian invasion, Athens' leadership of Greece, the war between Athens and Sparta, Alexander the Great, and the total Hellenic achievement. Pr.: Sophomore standing.

HIST 566. History and Culture of Rome. (3) In alternate years. Examines the various theories of Rome's origin, the causes, problems, and influences upon the republican government, political and economic problems of Roman expansion, and the Roman world. Various reforms including those of the Gracchi, Caesar, and Augustus. Contact with Greece and the older areas of civilization. The Roman imperial system, the many causes of Rome's fall, and Rome's role as a synthesizer of the ancient classical culture. Pr.: Sophomore standing.

HIST 567. Europe in the Middle Ages. (3) In alternate years. Europe from the fall of the Roman Empire to the thirteenth century. Investigates the conflict and interaction of Roman, Christian, and Germanic ideals and attitudes in the early Middle Ages, and the increasing complexity and sophistication of society, culture, religion, and government of the high Middle Ages. Pr.: Sophomore standing.

HIST 568. The Renaissance. (3) In alternate years. The Italian Renaissance as a major phase in the history of Western civilization and its spread to northern Europe. Pr.: Sophomore standing.

HIST 569. The Reformation. (3) In alternate years. A study of the Protestant, Catholic, and Radical Reformations with special attention to Luther, Calvin, the origins of the Church of England and the Presbyterian Church, the Anabaptists, the Puritans, and Roman Catholic Reform, and the impact of religious developments on the political, economic, social, and intellectual history of the Western world. Covers the period from approximately 1500 to 1660. Pr.: Sophomore standing.

◆**HIST 570. Europe in the Seventeenth Century.** (3) I. In alternate years. Surveys the economic, social, political and intellectual history of western Europe in the seventeenth century, a period marked by economic depression, international conflict, and domestic revolutions as well as by cultural achievement. Emphasizes the complex interaction among social groups; the rise of a European state system; the development of constitutional monarchy in England and absolute monarchy in France; and the change in values generated by the scientific revolution. Pr.: Sophomore standing.

HIST 571. Revolutionary Europe. (3) In alternate years. Europe from the death of Louis XIV in 1715 to the fall of Napoleon in 1815. The origins and development of the French Revolution and the Napoleonic legacy, also examines reform and counter-revolutionary movements in England, Italy, Russia, Poland, and the Germanies. Pr.: Sophomore standing.

HIST 572. Nineteenth Century Europe. (3) In alternate years. The history of Europe from the French Revolution to the end of the first World War. Major topics covered will include the rise of conservatism as an ideology and its application in practice, the nature of liberalism and socialism, the impact of science and technology, the origins and course of World War I. Pr.: Sophomore standing.

HIST 573. Twentieth Century Europe. (3) In alternate years. Examines the political, social, and intellectual developments of Europe in the period of the two world wars. Emphasis on the failure of democracy and the rise of competing antidemocratic and nondemocratic mass movements and ideologies. The course will also deal with the attempted system of collective security, its failure, and the origins and course of World War II. Pr.: Sophomore standing.

HIST 574. Europe since World War II. (3) In alternate years. Postwar European society, politics, economy, and culture. The effects of total war on the population; restoration and reconstruction. The influence of the U.S. and U.S.S.R. on Europe. Capitalism, socialism, and communism in technological society. European unity movements and their conflicts with traditional values.

HIST 576. European International Relations to 1815. (3) In alternate years. The nature, evolution, and function of the diplomatic system for the Ancient World to 1815. Analyzes the Greek and Roman diplomatic tradition, international relations during the Medieval, Renaissance, and Early Modern periods, and the works of various theorists. Sophomore standing.

HIST 577. European International Relations Since 1815. (3) II, in alternate years. The nature, evolution, and functions of the European diplomatic system from 1815 to the present. Focuses on the Vienna settlement, the Eastern Question, the Crimean War, Italian and German unification, origins of World War I, international developments between the two world wars, the cold war, and the post-cold war era. Includes analysis of major theorists. Sophomore standing.

HIST 578. Central Europe, 1500–1914. (3) In alternate years. The diplomatic, military, political, cultural, and social aspects of the Hapsburg empire in Central Europe from its foundation to its dissolution in the twentieth century. Pr.: Sophomore standing.

HIST 579. The British Isles to 1603. (3) In alternate years. English, Scottish, and Irish culture in the medieval and pre-modern periods. Early folk societies, feudalism, the church in society and politics, the origins of representative institutions and the religious reformations are studied topically. Pr.: Sophomore standing.

HIST 580. The British Isles Since 1603. (3) In alternate years. English society and politics in modern times with reference also to Scotland and Ireland. Emphasis on topics such as the three orders of society (king, lords, and commons), the churches and religion, the appearance of parliamentary sovereignty, the industrial revolution, and the extension of democratic institutions. Pr.: Sophomore standing.

HIST 582. Modern Eastern Europe. (3) In alternate years. Eastern Europe as an ethnically diverse region between the Germanic lands and Russia, emphasizing the impact of both external and internal forces upon the political, socioeconomic, and intellectual development of the various nations. Covers the period from the triumph of the three eastern monarchies over Poland to the Brezhnev Doctrine and Ostpolitik, including the growth of national consciousness and the continuing struggle for political independence. Pr.: Junior standing.

◆**HIST 583. History of France, 1400–1715.** (3) In alternate years. France from the conclusion of the Hundred Years War to the death of Louis XIV. French economy, society, and royal administration, and the changes generated in these areas by significant events: the Reformation and the Wars of Religion; the rise of France to world power; peasant uprisings and constitutional crisis; and the reforms of Richelieu, Colbert, and Louis XIV. Trends in art, architecture, and philosophy. Pr.: Sophomore standing.

◆**HIST 584. History of France since 1715.** (3) In alternate years. France from the death of Louis XIV to the present. The impact of the French Revolution and the Napoleonic system on the agrarian economy and aristocratic society of the eighteenth century; the evolution of liberalism, socialism, and colonialism; the development of parliamentary democracy and the impact of the Industrial Revolution; the French response to the devastation of World War I, the humiliation of World War II, and the colonial wars of the De Gaulle era. Pr.: Sophomore standing.

HIST 585. Medieval Religion and Politics. (3) In alternate years. The interrelationship of religion and politics from the late Roman Empire to the Conciliar Epoch. Christianity in the Roman Empire and the barbarian kingdoms, the development of royal theocracy, the rise of the papacy, the conflict of church and state, the secularization of government, the Avignon papacy, the Great Schism, and conciliarism. Pr.: Sophomore standing.

HIST 586. Advanced Seminar in History. (3) I, II. An undergraduate seminar that focuses on the intellectual principles of the historical discipline as well as the fundamental research techniques and writing skills used by historians. Each section of the seminar will center on a particular topic or historical problem. The students will prepare a research project pertinent to the seminar topic. All history majors must take this seminar to complete the requirements for their degree. Pr.: Six hours of history courses at or above the 500 level.

HIST 587. Nineteenth-Century Imperial Germany. (3) In alternate years. Central Europe in the French Revolutionary era, the revolutions of 1848, German unification, imperial Germany, emphasizing social changes, especially the transition from agrarian to industrial society. Pr.: Sophomore standing.

HIST 588. Rise and Fall of Nazi Germany. (3) In alternate years. Examines the political, social, economic, and intellectual developments in Germany from World War I to the end of World War II. The establishment of the Weimar republic, the nature of its democratic system, the flourishing of cultural activities and the attack on democratic theory and practice leading to the establishment of a totalitarian dictatorship. National Socialism and its leader and alternative interpretations of National Socialism. Pr.: Sophomore standing.

HIST 590. History through Film. (3) I, in alternate years. A study of full-length, major production films to show how films can enhance, distort, or obscure our understanding of the past. Emphasizes historical development, using motion pictures as social documents.

HIST 591. History of Russia to 1801. (3) In alternate years. Medieval and early modern Russia with emphasis on the culture of Kievan Rus', the Mongol Yoke, the rise of Moscow, and the emergence of imperial Russia. Emphasizes those trends that contributed to the character of modern Russian society including Orthodoxy, autocracy, serfdom, and westernization. Pr.: Junior standing or consent of instructor.

HIST 592. Grandeur and Decline of Imperial Russia. (3) In alternate years. Russia in the nineteenth century with emphasis on the political, economic, social, and intellectual development of tsarist society. Topics of special concern: origins of the intelligentsia, plans for political reform under absolutism, serfdom and economic development, the legacy of the Great Reforms and counter reforms, origins and evolution of revolutionary populism. Pr.: Junior standing or consent of instructor.

HIST 593. The Vietnam War. (3) In alternate years. This course examines the origins, actions and consequences of the Indochina wars fought by the French, Japanese, and Americans during the last century. Particular emphasis is placed on America's experience in Southeast Asia. Videos from the PBS series: "Vietnam; A Television History," are used in the course. Pr.: Sophomore standing.

HIST 596. Holocaust: The Destruction of the European Jews. (3) I, in alternate years. Analysis of the attempts by the National Socialist government of Germany to exterminate the Jewish population of Europe. Major issues discussed will include: nineteenth-century antidemocratic and antisemitic movements; Hitler's concept of antisemitism and personal sources of Hitler's genocidal policy; evolution of the genocidal policy and its implementation; Jewish resistance and collaboration; long-range consequences of the Holocaust. Pr.: Sophomore standing.

HIST 597. Topics in European History. (1–3) In alternate years. Provides instructor and students the opportunity to investigate in detail a particular theme, event, or problem in European history. Topics vary. May be repeated for credit. Pr.: Sophomore standing.

HIST 598. Topics in Non-Western History. (1–3) On sufficient demand. Provides instructor and students the opportunity to investigate in detail a particular theme, event, or problem in non-Western history. Topics vary. May be repeated for credit. Pr.: Sophomore standing.

HIST 599. Senior Seminar for Secondary Teachers. (3) II. Analysis of the historical content of teaching materials currently in use at the secondary level in public schools to determine the historical validity of the materials. Pr.: Sophomore standing.

HIST 648. Naval History. (3) I or II, in alternate years. Ships, technological developments, navies, tactics, warfare, strategy, and the interrelationship between naval thinking and national and international politics. Pr.: Junior standing or consent of instructor.

HIST 649. Introduction to the History of Aviation. (3) In alternate years. The development of aviation since the Wrights, providing a world view of man's conquest of the air in both human and technological terms including the development of military, commercial, and general aviation. Pr.: Junior standing or consent of instructor.

HIST 650. Internship in History. (3) I, II, S. Practical professional experience involving at least three weeks in an archive, museum, historical library, or business. Student projects must be approved in advance and a report submitted at the end of the work period. May be repeated once for credit. Pr.: Junior standing.

HIST 703. Overseas European Studies. (2–3) Intersession only, in alternate years. Short-term, intensive, and in-depth study of various aspects of European history and culture with readings, lectures, discussions, and on-the-spot experiences which will relate historical events to the places visited. Pr.: Senior or graduate standing.

HIST 798. Readings in History. (1–3) Students will read on a central theme, attend weekly discussions, and write a final report.

HIST 799. Problems in History. (Var.) Intensive study of a particular phase of history. Students will attend weekly discussions and write a major research paper on their findings.

Journalism and Mass Communications

Todd Simon,* Director

Professors Oukrop,* Parsons,* and Simon; Associate Professors Adams,* Chastain, Daly, Grimes,* MacFarland,* Pearce,* and Prince;* Assistant Professors Bergen, Bressers, Daniel, Freeland, Hume, Johnson, Kamerer,* Lamb, Lubbers,* Meeds,* and Puntney.

The study of mass communications provides students with the tools to function effectively in an information-intensive society, whether as creators or as consumers of information.

Students follow a general course of study in the College of Arts and Sciences and a specialized professional curriculum in the A.Q. Miller School of Journalism and Mass Communications. The general college curriculum prepares students to be knowledgeable persons in a complicated world. The professional curriculum educates students in skills, theory, law, ethics, and other essentials for a mass communications career.

The program offers a hands-on education that provides students with practical experience. Students can serve on the staffs of the *Kansas State Collegian*, the student newspaper published five days a week, and the *Royal Purple* yearbook. Twice, the *Collegian* and the *Royal Purple* have simultaneously won the prestigious national Pacemaker Awards, a combination achieved by only one other school. Majors also have access to campus radio station KSDB-FM and to television studio and field equipment for producing programming for cable television and the university's low-power TV station. The school also has a photo lab, a multimedia lab, and two Macintosh writing, editing, and graphics labs.

The school is national headquarters of the Journalism Education Association for high school journalism educators and has created the Huck Boyd National Center for Community Media. The school offers more than $55,000 in scholarships each year to its outstanding majors, and students participate in the Society of Collegiate Journalists, the Advertising Club, the Public Relations Student Society of America, the Society of Professional Journalists, and Mass Communicators of Many Cultures.

The program is housed in Kedzie Hall, with radio-television studios and offices in McCain Auditorium and in Bob Dole Hall.

Updated information on the school's faculty and curriculum is available on the World Wide Web at http://www.jmc.ksu.edu.

Entrance requirements

To become a major, a student must have a 2.5 GPA based on at least 30 hours at the 100-level or above. A transfer student must have a 2.5 GPA on transferable course work, plus a 2.5 GPA on at least 12 hours at K-State, for a total of 30 hours. If a transfer student does not have a transferable 2.5 GPA, the student must compile a 2.5 GPA on 30 hours at K-State to become a major.

While awaiting eligibility to become a major, all freshmen and new transfer students from other institutions are eligible to be a pre-major.

Mass communication major

Requirements for a mass communication major consist of 39 credit hours in the School of Journalism and Mass Communications and a total of 126 hours. National accreditation standards require all mass communication graduates to complete at least 87 hours of course work outside the school, with at least 65 hours of that coursework in the basic liberal arts and sciences.

A student must fulfill the general requirements of the College of Arts and Sciences for either the B.A. or the B.S. degree, in addition to completing ECON 110 Principles of Macroeconomics.

Beyond this, a student selects a 15-hour outside concentration in another department. Two of the outside concentration courses must be advanced (500-level or above, or requiring a prerequisite course that the student has taken). Up to two of the courses also may apply toward general arts and sciences requirements.

To graduate, a student must achieve a 2.5 GPA in courses within the school.

Students in the A.Q. Miller School of Journalism and Mass Communications must complete the requirements of one of the school's sequences in journalism, advertising, public relations, and radio-television.

A curriculum guide for majors and pre-majors is available in the K-State Student Union Bookstore.

Print journalism

MC 235	Mass Communication in Society	3
MC 400	News and Feature Writing	3

MC 440	Editing and Design	3
MC 500	Advanced News and Feature Writing	3
MC 540	Advanced Editing and Design	3
MC 565	Law of Mass Communications	3
MC 595	Mass Communication Research	3

Select one of the following:

MC 600	Public Affairs Reporting	3
MC 535	Photojournalism	3

Select one of the following:

MC 650	Newspaper Management	3
MC 710	History of Journalism	3
MC 720	Ethics in Mass Communications	3
MC 730	Seminar in Future of the Media	3

Electives (at least 3 hours at 500-level or above) 12

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Electronic journalism

MC 235	Mass Communication in Society	3
MC 400	News and Feature Writing	3
MC 500	Advanced News and Feature Writing	3
MC 505	Electronic News Reporting	3
MC 585	Advanced Electronic News Reporting	3
MC 565	Law of Mass Communications	3
MC 595	Mass Communication Research	3

Select one of the following:

MC 550	Journalism Internship	3
MC 570	Audio Techniques	3
MC 580	Video Techniques	3
MC 600	Public Affairs Reporting	3

Select one of the following:

MC 685	Electronic Media Management	3
MC 715	History of Electronic Media	3
MC 720	Ethics in Mass Communications	3
MC 730	Seminar in Future of the Media	3

Electives (at least 3 hours at 500-level or above) 12

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Advertising

MC 235	Mass Communication in Society	3
MC 320	Principles of Advertising	3
MC 420	Advertising Writing	3
MC 545	Advertising Media Planning	3
MC 555	Advertising Techniques	3
MC 565	Law of Mass Communications	3
MC 595	Mass Communication Research	3
MC 640	Advertising Campaigns	3

Select one of the following:

MC 520	Newspaper Advertising Sales	3
MC 525	Electronic Media Advertising Sales	3

Electives (at least 3 hours at 500-level or above) 12

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Public relations

MC 235	Mass Communication in Society	3
MC 325	Fundamentals of Public Relations	3
MC 400	News and Feature Writing	3
MC 440	Editing and Design	3
MC 445	Public Relations Writing	3
MC 565	Law of Mass Communications	3
MC 595	Mass Communication Research	3
MC 635	Public Relations Techniques	3
MC 645	Public Relations Campaigns	3
MC 550	Public Relations Internship	1–3

Electives (at least 3 hours at 500-level or above) 9–11

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Radio-television

MC 235	Mass Communication in Society	3
MC 410	Writing for Electronic Media	3
MC 475	Concepts of Electronic Production	3
MC 490	Junior Seminar in Electronic Media	3
MC 565	Law of Mass Communications	3
MC 595	Mass Communication Research	3
MC 550	Radio-TV Internship	1–3

Select one of the following:

MC 570	Audio Techniques	3
MC 575	Multimedia Techniques	3
MC 580	Video Techniques	3

Select one of the following:

MC 525	Electronic Media Advertising Sales	3
MC 655	Electronic Media Programming	3
MC 685	Electronic Media Management	3

Electives (at least 3 hours at 500-level or above) 12–14

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Credit through quiz-out

Any student may apply to test out of professional practice courses in journalism and mass communications by presenting to the appropriate sequence head a portfolio, tapes, or other suitable evidence of performance that would allow assessment of course-related experience. After review of the material, the sequence head may refer the application to the appropriate instructor who will determine the number of credit hours, if any, and the method of examination or evaluation to be employed to determine whether credit shall be given. Such credit shall be granted on a Credit/No Credit basis. No more than 12 semester hours may be earned through quiz-out and at least 24 of the student's journalism credit hours must be K-State resident hours.

Transfer course work

Students may transfer a maximum of 12 semester hours in the major. Courses in journalism and mass communications above the 12-hour maximum will not be accepted as electives outside the major and will not be accepted as part of the graduation requirement. No journalism and mass communications course will transfer to K-State without a grade of C or better.

When transfer students present an accumulation of credits in courses that consist of laboratory work, the school may accept a maximum of 3 credit hours for all such work, equivalent to courses such as Publications Practice.

No transfer credit will be given for Editing and Design, Advanced News and Feature Writing, or Law of Mass Communications unless such work was taken at a college or university accredited by the Accrediting Council on Education in Journalism and Mass Communications.

Mass communications courses

MC 010. Pre-Major Orientation. (0) I. An orientation to studies in mass communications for pre-majors. Provides an overview of the curriculum electives, extracurricular activities in mass communications, the advising process, and career options.

◆**MC 235. Mass Communication in Society.** (3) I, II, S. A historical, social, legal, economic, and technological study of mass communication and its role and impact in society. Open to majors and nonmajors.

MC 300. Journalism in a Free Society. (3) II. Emphasizes the role of journalism in building an informed citizenry in a democracy, serving as a watchdog of government, providing news in a context that gives meaning to the people, and being socially responsible in the midst of a changing economic structure. Open to majors and nonmajors.

MC 305. Radio–Television and Society. (3) I. Influence of electronic media in today's culture. Examination of the dynamics of telecommunications including production techniques. Open to majors and nonmajors.

MC 320. Principles of Advertising. (3) I, II. An examination of the advertising field and its relationship to marketing and journalism. Open to majors and nonmajors.

MC 325. Fundamentals of Public Relations. (3) I, II. Contemporary persuasive social science principles, processes, and issues involved in the management of communications between an organization and its publics. Open to majors and nonmajors.

MC 360. Publications Practice. (1–4) I, II, S. Practical work in newspaper and yearbook production, and photography on student publications under supervision of an instructor. Three hours lab a week for each hour of credit.

MC 365. KSDB Audition. (0) I, II, S. Production of music, news, and/or sports audio tapes to be evaluated by faculty in preparing students for an on-air position with KSDB-FM.

◆**MC 399. Honors Seminar in Mass Communications.** (3) Pr.: Honors students only.

MC 400. News and Feature Writing. (3) I, II, S. Instruction in information gathering and writing techniques for the various media. Pr.: MC 235 and a 2.5 GPA upon completion of 30 or more hours. Typing proficiency is necessary.

MC 410. Writing for the Electronic Media. (3) I, II. Study of forms and the preparation of written material for news, commercial announcements, and promotion for the electronic media, and of the regulations concerning advertising copy. Pr.: MC 235 and a 2.5 GPA upon completion of 30 or more hours. Typing proficiency is necessary.

MC 420. Advertising Writing. (3) I, II. Fundamentals of writing for the various media to solve advertising problems. Setting communication goals within the context of writing to persuade and inform mass audiences. Pr.: MC 235 and 320, and a 2.5 GPA upon completion of 30 or more hours. Typing proficiency is necessary.

MC 430. Photography I. (3) I, II. Basic camera and laboratory techniques of photography. Pr.: 2.5 GPA upon completion of 30 or more hours.

MC 440. Editing and Design. (3) I, II. Survey of graphic arts principles, fundamentals of the editing process, and the relationship to the elements of newspaper design and the editing function. Pr.: MC 400 with grade of C or better and a 2.5 GPA upon completion of 30 or more hours.

MC 445. Public Relations Writing. (3) I, II, S. Examines various forms of contemporary public relations writing, with special emphasis on preparation of messages for different media and audiences. Pr.: MC 325 and MC 400 with a grade of C or better.

MC 450. Topics in Mass Communications. (1–3) I, II. Selected topics in the study of mass communication practices and principles. May be repeated for credit when topic varies.

MC 460. KSDB Participation. (1–3) I, II, S. Supervised participation in the university's student FM radio station, emphasizing music announcing, board production, recorded production, news and sports play-by-play, and FCC operating regulations. Pr.: MC 365.

MC 475. Concepts of Electronic Media Production. (3) I, II. Covers aesthetics, vocabulary, and preproduction planning for audio, video, and multimedia production, with an emphasis on developing critical analysis skills. Pr.: MC 400, 410, or 420 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 485. Video Participation. (1–3) Supervised participation in program production for entertainment, news, and corporate videos. Scripted, supervised group projects. Three hours of lab participation a week required for each hour of credit. Pr.: MC 475.

MC 490. Junior Seminar in Electronic Media. (3) II. Current issues in electronic media, including regulation, law, technology, and programming. Preparation for careers in the electronic media. Pr.: MC 410 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 499. Senior Honors Thesis. (2) Pr.: Honors students only.

MC 500. Advanced News and Feature Writing. (3) I, II. Intensive course emphasizing reportorial principles and practices. Students serve as reporters for the *Kansas State Collegian,* writing for an audience of 20,000 readers daily. Pr.: MC 440 with grade of C or better.

MC 505. Electronic News Reporting. (3) I. Practical experience in gathering, writing, editing, producing, and presenting news for the electronic media, and study of related issues. Pr.: MC 500 with grade of C or better.

MC 510. Yearbook Editing and Management. (2) I. Planning, editing, layout, writing, and financing a publication.

MC 520. Newspaper Advertising Sales. (3) I. Basics of retail advertising applied to newspapers including sales, design, copy writing, production, budgeting, and legal and ethical issues. Pr.: MC 320 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 525. Electronic Media Advertising Sales. (3) II. Retail advertising applied to radio, television, and cable systems. Retail ad campaigns, media buying, selling techniques. FTC and FCC ad regulations covered. Pr.: MC 320 or MKTG 400 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 530. Media, Race, and Social Change. (3) Examines how the media cover social change, particularly racial issues, and studies the development and current status of selected ethnic media in the United States. Pr.: Junior standing.

MC 535. Photojournalism. (1–3) The materials, principles, and processes of photography directed toward visual reporting in newspapers, magazines, and other media. Content and credit vary. Potential topics include documentary picture story, essay, and sequence; spot news, feature, and sports photography; combining words and pictures effectively; marketing techniques; legal restrictions. Lectures, demonstrations, and laboratory. Pr.: MC 400 and 430 with grades of C or better. May be repeated for a maximum of 4 semester hours.

MC 540. Advanced Editing and Design. (3) II. Advanced study of the editing processes with emphasis on handling the story, writing headlines, use of all elements for packaging the news, and creative use of the editing tools. Students work on the *Kansas State Collegian* about six hours each week. Pr.: MC 500 with grade of C or better.

MC 545. Advertising Media Planning. (3) I, II. The selecting, scheduling, selling, and buying of the various advertising media. Pr.: MC 420 with grade of C or better.

MC 550. Mass Communications Internship. (1–3) I, II, S. The student works in a professional capacity under proper professional and faculty supervision with reports from student and supervisor required. Pr.: 12 specified semester hours of MC courses and consent of instructor.

MC 555. Advertising Techniques. (3) I, II, S. The planning, creation, and production of advertising messages for the various mass communication media. Pr.: MC 420 with grade of C or better.

MC 565. Law of Mass Communications. (3) I, II, S. A study of legal issues relating to mass communications. Emphasis on defamation, privacy, copyright, administrative controls, and other areas related to the mass media. Pr.: Junior standing, with a 2.5 GPA.

MC 570. Audio Techniques. (3) I. Theory and practice of radio remotes, automation, and multichannel recording and editing in the production of commercials, dramatic narrative, documentary programs, and multimedia. Pr.: MC 475 with grade of C or better.

MC 575. Multimedia Techniques. (3) I. Theory and practice of multimedia mass communication, with an emphasis on preproduction planning, authoring, and development of computer-based audio, video, and graphic materials. Pr.: MC 475, MC 500, MC 555 or MC 635 with grade of C or better.

MC 580. Video Techniques. (3) II. Theory and practice of electronic field production, video editing, and video for multimedia. Pr.: MC 475 with grade of C or better.

MC 585. Advanced Electronic News Reporting. (3) II. Reporting of issues of local importance, information-gathering techniques, in-depth writing, and electronic media news production methods. Pr.: MC 505 with grade of C or better.

MC 595. Mass Communication Research. (3) I, II. Formulation of mass communication research and design. Appropriate methods of data collection and data analysis. Pr.: MC 235, a 2.5 GPA upon completion of 30 or more hours, and completion of a mathematics or statistics course.

MC 600. Public Affairs Reporting. (3) I, II. Investigative reporting of local, state, and national affairs. Pr.: MC 500 with grade of C or better.

MC 605. Supervision of School Publications. (3) A methods course for those planning to teach secondary or community college journalism courses and advise high school or community college publications.

MC 612. Gender Issues and the Media. (3) II. The portrayal of women and men by the media, and media employment issues based on gender. Pr.: Junior standing and one course in MC or women's studies.

MC 615. Magazine Article Writing. (3) I. Preparation of feature stories and articles; techniques of market analysis, and marketing of articles written in course. Pr.: MC 500.

MC 620. Magazine Production. (3) II. The practical application of theory to writing, editing, graphic reproduction, layout, and management of magazines. Pr.: MC 500.

MC 630. Public Relations Case Studies. (3) Study of historic and contemporary public relations situations using a case-method approach. Attention is directed at strategic planning and implementation by public relations managers. Students establish criteria on what constitutes a public relations program and theories and norms for the selection of objectives and strategies under varying conditions. Pr.: MC 325 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 635. Public Relations Techniques. (3) I, II. Focuses on the use of communications techniques in achieving organizational goals. Includes planning, application, and ethics of messages for print, electronic, and online media and for special events. Pr.: MC 325, MC 440, and MC 445 with grades of C or better.

MC 640. Advertising Campaigns. (3) I, II. The managerial development and execution of consumer, industrial, and institutional advertising campaigns. Pr.: MC 545, 555, and 595 with grades of C or better; senior standing.

MC 645. Public Relations Campaigns. (3) I, II. Advanced study of an organization's public relations needs. Includes researching the situation, analyzing audiences, and preparing strategic plans for approved clients. Pr.: MC 595 and 635 with grades of C or better.

MC 650. Newspaper Management. (3) II. The management of newspapers dealing with organization, ownership, promotion, research, production, equipment, markets, personnel, legal aspects, advertising, buying and selling of newspaper properties, business practices, and news policy. Pr.: MC 540 or concurrent enrollment.

MC 655. Electronic Media Programming. (3) II. The principles, planning, and development of radio-television-cable programs, schedules, and related regulation. Pr.: MC 410 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 670. Advertising and Social Responsibility. (3) Examines social, ethical, and legal issues and problems facing the advertising industry, and its relationship to the consumer. Pr.: Junior standing with a 2.5 GPA and completion of MC 320.

MC 680. Readings in Mass Communications. (1–3) I, II. Investigation of the literature of mass communications. Three books per credit hour. Pr.: Senior or graduate standing and consent of supervisory instructor.

MC 685. Electronic Media Management. (3) I. Management practices of broadcast, cable, and nonbroadcast facilities including regulation and sales. Pr.: MC 410 or MANGT 420 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 690. Problems in Mass Communications. (1–4) I. II. Pr.: Background of courses needed for problem undertaken.

MC 700. Propaganda and Mass Communications. (3) History, theory, development, and impact of propaganda as a controversial mass communication strategy that influences public opinion. Pr.: Graduate standing, or senior standing with a 2.5 GPA.

MC 705. Fund Raising by Non-Profit Organizations. (3) Theory and practice of fund raising as a function of public relations in non-profit organizations. Focuses on why and how people give to philanthropic causes. Pr.: Graduate standing, or senior standing with a 2.5 GPA and completion of MC 325.

MC 710. History of Journalism. (3) II. Growth and development of the news media in the United States and their economic, political, and social significance. Pr.: Graduate standing, or senior standing with a 2.5 GPA and completion of a U.S. history course.

MC 715. History of the Electronic Media. (3) I. Growth and development of the electronic media in the United States and their economic, political and social significance. Pr.: Graduate standing, or senior standing with a 2.5 GPA and completion of a U.S. history course.

MC 720. Ethics in Mass Communications. (3) I. Moral analysis, argument, and decision-making by the mass communicator, with linkage of ethics to the conduct of media professionals in the United States. Pr.: Graduate standing, or senior standing with a 2.5 GPA and completion of a philosophy course.

MC 725. International Communications. (3) I. Comparative study of world media systems and the role of mass communications in national development. Pr.: Graduate standing, or senior standing with a 2.5 GPA.

MC 730. Seminar in the Future of the Media. (3) A study of philosophical and technological advances in mass communications with emphasis on projected patterns of future growth and development. Pr.: Graduate standing, or senior standing with a 2.5 GPA.

MC 740. Colloquium in Mass Communications. (1–3) Discussion of selected topics in mass communications research and practice. May be repeated once for credit when topic varies. Pr.: Senior or graduate standing.

MC 765. Communication Theory. (3) I. An examination of major communication theories as they relate to mass communications. Pr.: Graduate standing, or senior standing with a 2.5 GPA.

MC 770. Professional Journalism Practicum. (1–4) For advanced students. Supervised practical work in professional journalism and mass communications. Includes laboratory investigation, field work, and internships. Pr.: MC 440 or 505 and consent of supervising instructor.

MC 780. Research Methods in Mass Communications. (3) I. Survey of research methods used in the study of the mass media. For graduate students.

Kinesiology

David A. Dzewaltowski, Head

Professors McElroy,* Noble,* and Musch; Associate Professors Barstow, Dzewaltowski* and Poole;* Assistant Professors Harms and McAllister.

Kinesiology is the study of human movement across a range of tasks including exercise, daily living, play, sport, and work. Course work integrates biological and behavioral approaches using biomechanical, physiological, psychological, and sociological perspectives to study human movement from cell to society.

Kinesiology promotes an understanding of the necessity of movement activities for an individual's physical and psychological health.

Kinesiology

Students may earn a B.A. or B.S. degree in kinesiology and a B.S. dual degree with majors in nutrition and exercise sciences. Graduates seek careers in corporate and community settings in fitness and wellness and in hospital settings in cardiopulmonary rehabilitation. Many students enter graduate and professional schools for preparation for careers in physical therapy, pharmacy, medicine, dietetics, biomechanics, exercise physiology, sport psychology, sport sociology and other related fields.

Kinesiology majors must take a minimum of 35 kinesiology hours that include 20 hours from the lower level core, 9 hours from the upper level core (one course from Categories A, B, or C), and the remaining 6 hours from the upper level core and/or elective kinesiology courses at the 300 level or above.

Lower-level core core (20 hours)

KIN 220	Biobehavioral Bases of Exercise	3
KIN 250	Measurement and Research Techniques	3
KIN 330	Biomechanics	3
KIN 335	Physiology of Exercise	4
KIN 336	Physiology of Exercise Lab	1
KIN 340	Physical Activity in Contemporary Society	3
KIN 345	Psychological Dynamics of Physical Activity	3

Upper-level core (9 hours; one course each from Category A, B, C)

Category A (Select one course from the biological basis of human movement)

KIN 601	Cardiorespiratory Exercise Physiology	3
KIN 603	Cardiovascular Exercise Physiology	3
KIN 605	Topics in Biological Basis of Kinesiology	3

Category B (Select one course from the behavioral basis of human movement)

KIN 600	Exercise Psychology	3
KIN 602	Gender Issues in Sport and Exercise	3
KIN 604	Exercise and Mental Health	3
KIN 606	Topics in the Biobehavioral Basis of Kinesiology	3

Category C (Select one course from the following list that integrates the biological and behavioral bases of human movement)

KIN 590	Seminar in Kinesiology	3
KIN 630	Design and Analysis of Exercise and Sport Equipment	3
KIN 650	Development of Motor Control	3
KIN 657	Therapeutic Use of Exercise in the Treatment of Disease	3

Basic science prerequisites

Prerequisites for several of the Category A, B, and C courses are identified in the course descriptions. Below is an overview of basic science prerequisites. Courses in biochemistry and chemistry are strongly encouraged for some areas of study.

BIOL 198	Principles of Biology	4
BIOL 240	Structure and Function of the Human Body	8
MATH 100	College Algebra	3
MATH 150	Trigonometry	3
PHYS 113	General Physics I	4
PSYCH 100	General Psychology	3
SOCIO 211	Introduction to Sociology	3

Pre-professional curricula

Students seeking admission to physical therapy, medical, and other health professional schools may major in kinesiology (or another discipline) provided the required pre-professional course work is completed. Students should seek a pre-professional health professions advisor from the College of Arts and Sciences dean's office and a kinesiology advisor for proper planning to meet academic and professional goals.

Emphasis in fitness promotion

This emphasis prepares students to design, implement, and administer physical fitness programs in YMCAs, private corporations, hospitals, clinics, and fitness clubs. Included is course work in basic nutrition, nutrition and exercise, exercise testing and prescription, adult exercise programs, and supervised field experiences. Students completing this course work are prepared to seek certification from the American College of Sport Medicine as an exercise professional.

Dual degree in nutrition and exercise science

This degree provides preparation for professional careers in wellness and careers that interface the roles of nutrition and physical performance. Principles of nutrition, food science, community nutrition, clinical nutrition, concepts of personal health, and nutrition needs throughout the life cycle are included in this degree. Consult with advisors in the Department of Foods and Nutrition and Kinesiology for more detailed information.

Kinesiology courses

The following courses may be taken by students majoring in kinesiology or other students meeting prerequisite requirements.

KIN 200. Kinesiology: An Introductory Analysis. (3) I. A survey of key areas of study within kinesiology emphasizing the multifaceted nature of the field; to encourage an understanding and appreciation of the disciplinary, professional, and personal perspectives of the subject.

KIN 205. The Sporting Mind: Maximizing Performance. (2) An introduction to the theory and application of cognitive skills and strategies for both athletes and coaches. Pr.: PSYCH 110.

◆KIN 220. Biobehavioral Bases of Exercise. (3) I, II. A critical examination of the role and impact of physical activity in contemporary society. Current perspectives from the biological and behavioral domains of kinesiology will be used to explore the significance of physical activity with particular emphasis placed on implications for health-related fitness. Theory and research will be used to help students make personal applications conducive to lifelong commitment to physical activity. Topics include health-fitness assessment, physiology of physical activity, biomechanics of physical activity and social/psychological determinants of sedentary vs. physically active lifestyles. Two hours of lec. and two hours of lab experiences.

KIN 250. Measurement and Research Techniques in Kinesiology. (3) I, II. Theory and techniques of measurement and research in the biological and behavioral aspects of kinesiology. Pr.: KIN 220

KIN 320. Motor Learning and Development. (3) II. Issues of motor learning and development as they relate to the application of instructional techniques. Two hours lecture and two hours lab a week. Pr.: PSYCH 110 or EDCEP 215.

KIN 325. Introduction to Physical Culture in the Western World. (3). A survey of the historical and philosophical foundations of physical culture in western civilization.

KIN 330. Biomechanics. (3) I, II. Mechanical and anatomical aspects of overt human movement. Kinematic and kinetic principles applied to the analysis of human movement. Two hours lecture and two hours lab a week. Pr.: BIOL 240 and PHYS 113.

KIN 335. Physiology of Exercise. (4) I, II. The responses of the human body to exercise. Emphasis will be placed on understanding the structure-function relationships of the respiratory, cardiovascular, and muscular sytems and how their function is integrated to support the dynamics of muscular contraction. Limitations to exercise performance will be examined in health and disease and the adaptability of the human body to physiological (i.e., exercise training) and environmental (e.g., hypoxia) stressors will be examined. Four hours lec. per week. Pr.: BIOL 240.

KIN 336. Physiology of Exercise Lab. (1) I, II. A laboratory course to supplement the material of KIN 335. Two hours lab per week. Pr.: KIN 335 or con enrollment.

KIN 340. Physical Activity in Contemporary Society. (3) I, II. Theories and research on the social significance of physical activity in American society. Includes a focus on play, games, sport, fitness, and exercise in contemporary society. Pr.: SOCIO 211.

KIN 345. Psychological Dynamics of Physical Activity. (3) I, II. Theories and research on the cognitive, emotional, and behavioral dynamics of physical activity and their application to changing behavior in a movement context. Pr.: PSYCH 110.

KIN 398. Topics in Kinesiology. (1–3) On sufficient demand. Study of a selected topic in an area not covered in the curriculum or involving application of theory presented in a related subject core course. May be repeated as topic varies.

◆KIN 399. Honors Seminar. (1–3) Selected topics in kinesiology. Open to nonmajors in the honors program.

KIN 405. Choreographing Aerobic Dance and Exercise Routines. (2) A study of choreography and methodology in teaching aerobic dance and exercise routines in various educational settings. Emphasis upon preparation and progression of routines. Selecting music, designing routines, and methods of presenting to various age groups. Pr.: KIN 330 and 335.

KIN 430. Practicum in Lifetime Sports. (2) I, II. Supervised students assist in lifetime sports classes. Four hours lab a week. Pr.: Junior standing.

KIN 435. Sport and Contemporary Society. (3) II. An analysis of sport and its role in contemporary society. Course creates a greater awareness of the social significance of sport in society and fosters the capacity to use critical thinking in the analysis of significant sport issues. Cross-listed with Sociology, see SOCIO 435. Pr.: SOCIO 211.

KIN 463. Laboratory Practicum in Kinesiology. (1–2) I, II, S. Supervised students assist in laboratory. Four hours lab a week. Pr.: Junior standing and appropriate background for problem undertaken.

KIN 498. Honors Tutorial in Kinesiology. (1–3) I, II. Individually directed research in kinesiology, normally as a preliminary to writing a senior honors thesis. May be repeated once to a total of three hours. Pr.: Sophomore standing, membership in the honors program of the College of Arts and Sciences, and permission of instructor.

KIN 515. History of Sport. (3) The historical development of sport (especially in Europe and North America) including the growth of competition, the rise of mass spectator sports, elitism, and the changing function of sport. History of sport as business and history of the relationship between sport and other institutions. Cross-listed with History, see HIST 515.

KIN 520. Practicum in Exercise Science. (1–3) I, II. Practical experiences in the fitness setting such as observation and participation in exercise testing and prescription, exercise leadership, and record keeping and program management. Pr.: Consent of instructor.

KIN 590. Seminar in Kinesiology. (3) II. Issues and problems involving integration of the subdisciplines of kinesiology and professional areas of application. Pr.: Completion of all or concurrent enrollment in final kinesiology core courses.

KIN 598. Topics in Kinesiology. (1–3) On sufficient demand. Study of a selected topic in kinesiology involving either an in-depth study or application of theory presented in a related core course. May be repeated as topic varies. Pr.: Related core course.

KIN 599. Independent Studies in Kinesiology. (1–3) I, II. Selected topics in kinesiology. Maximum of 3 hours applicable toward a degree. Pr.: Consent of undergraduate coordinator.

KIN 600. Exercise Psychology. (3) I. An examination of the theory and research related to the biopsychosocial antecedents of exercise participation. Topics will include exercise motivation, models of exercise perception and intervention strategies used to increase exercise participation. Pr.: KIN 340 and KIN 345.

KIN 601. Cardiorespiratory Exercise Physiology. (3) I. An examination of the structure and function of the respiratory system and the manner in which oxygen passes from the atmosphere to its site of utilization in the mitochondria. Exercise and environmental stresses will form the basis for examining the capacity, plasticity, and limitations to respiratory function. Pr: KIN 335. Cross-listed with Anatomy and Physiology.

KIN 602. Gender Issues in Sport and Exercise. (3) II. An examination of the impact of exercise and fitness trends on women in contemporary society with particular emphasis on how society presents obstacles to exercise and fitness. Topics include the relationship between exercise patterns and family structure, cosmetic fitness, eating disorders, and social class. Pr. KIN 340 and KIN 345.

KIN 603. Cardiovascular Exercise Physiology. (3) II. Study of the structure and function of the cardiovascular system as it pertains to acute and chronic exercise. Topics include the control of blood pressure, vascular volume, and blood flow during orthostasis and exercise. Pr: KIN 335. Cross-listed with Anatomy and Physiology.

KIN 604. Exercise and Mental Health. (3) II. Study of research and theory related to mental health consequences of physical activity. Topics will include the role of exercise in developing self-esteem and body image as well as the use of exercise as a therapy for emotional and behavioral disorders. Pr: KIN 340 and KIN 345.

KIN 605. Topics in the Biological Basis of Kinesiology. (1–3) I, II. Study of a selected topic in the biological basis of kinesiology involving either an in-depth study or application of theory presented in a related course area. Pr: KIN 335.

KIN 606. Topics in the Behavioral Basis of Kinesiology. (1-3) I, II. Study of a selected topic in the behavioral basis of kinesiology involving either an in-depth study or application of theory presented in a related course area. Pr. KIN 340 and 345.

KIN 625. Exercise Testing and Prescription. (3) I. Benefits and risks of exercise testing and prescription with healthy populations, individuals at risk, and patients with cardiovascular and metabolic diseases. Includes experiences with exercise test technology and methods of exercise prescription. Two hours recitation and two hours lab a week. Pr.: KIN 335, proof of current CPR, BLS, and First Aid certification.

KIN 630. Design and Analysis of Exercise and Sport Equipment. (3) I. Design and analysis of equipment used in selected sports and equipment used in both resistive and aerobic exercise. Relevant biomechanical and physiological principles will be reviewed and applied to evaluate the quality and effectiveness of equipment now available on the open market and to consider potential improvements in design. Three hours rec. a week. Pr.: KIN 330, KIN 335.

KIN 635. Nutrition and Exercise. (3) II. The interrelationships between diet, nutrition, and exercise. Topics covered include physical fitness, weight control, nutrient metabolism during exercise, and athletic performance. Pr.: KIN 335 and FN 132 or FN 502. Cross-listed with foods and nutrition; see FN 635.

KIN 650. Development of Motor Control. (3) I, II. A multi-level analysis of the neurophysiological activation of muscle, reflexes, sensory integration during movement, and theories of voluntary movement. Two hours lecture and two hours lab a week. Pr.: BIOL 240.

KIN 655. Fitness Promotion. (3) II. The study of the implementation and promotion of preventive health programs for populations at work, hospitals, and community fitness settings. Pr.: KIN 335.

KIN 657. Therapeutic Use of Exercise in the Treatment of Disease. (3) II. Analysis of pathophysiology associated with a number of different diseases and the impact on exercise performance as well as the use of exercise as a therapeutic modality. Pr: KIN 335.

KIN 700. Physical Culture in the Western World. (3). A seminar on selected topics in the historical and philosophical foundations of physical culture in Western Civilization. Pr.: Three hours of Western Heritage.

KIN 703. Minority Groups in Sports. (3) The contributions by, problems of, and discrimination against minority groups in sports. Pr.: SOCIO 211, KIN 340, PSYCH 435, or HIST 539.

KIN 718. Cinematographic and Videographic Analysis of Human Movement. (3) On sufficient demand. Techniques and instrumentation for the analysis of overt human movement using film, videotape, and other imaging techniques. Pr.: KIN 330.

KIN 792. Internship in Exercise Science. (6–8) I, II, S. Supervised field experience for the exercise science major in training settings such as YMCA, YWCA, municipal recreation agency, or industrial fitness agency. May be completed with half-time assignment for 12–16 weeks or full-time assignment for 6–8 weeks. Pr.: KIN 655.

KIN 796. Topics in Kinesiology. (1–4) On sufficient demand. Intensive study of a selected topic in kinesiology involving either greater in-depth study, or application of theory presented in a related course. May be repeated as topic varies. Pr.: 6 hours in kinesiology 500 or above. Only 6 hours may be counted toward degree. Cross-listed with Anatomy and Physiology.

Lifetime sports and exercise activity courses

For students in the College of Arts and Sciences, no more than 4 credit hours in lifetime sports and exercise activity classes may be applied toward a degree.

KIN 100. Adaptive Physical Activities. (1) I, II. Exercise programs adapted to the needs of the special student.

KIN 104. Swimming I. (1) Beginning instruction for students who have no previous experience with swimming.

KIN 105. Swimming II. (1) For the beginning swimmer who has had some previous swimming experience.

KIN 106. Swimming III. (1) Pr.: KIN 105 or consent of instructor.

KIN 107. Fitness Swimming. (1) Pr.: KIN 106 or consent of instructor.

KIN 120. Basketball. (1)

KIN 122. Flag Football. (1)

KIN 123. Soccer. (1)

KIN 124. Softball. (1)

KIN 126. Volleyball I. (1)

KIN 127. Volleyball II. (1) Pr.: KIN 126 or consent of instructor.

KIN 135. Archery. (1)

KIN 136. Badminton. (1)

KIN 140. Golf. (1)

KIN 143. Handball. (1)

KIN 144. Judo I. (1)

KIN 145. Judo II. (1) Pr.: KIN 144 or consent of instructor.

KIN 148. Racquetball. (1)

KIN 150. Self Defense. (1) Instruction in selected self-defense techniques derived from judo, karate, and other martial arts.

KIN 151. Tennis I. (1)

KIN 152. Tennis II. (1) Pr.: KIN 151 or consent of instructor.

KIN 154. Tumbling and Floor Exercise. (1)

KIN 160. Aerobic Dancing and Exercise. (1)

KIN 161. Fitness and Conditioning. (1)

KIN 162. Jogging. (1)

KIN 163. Weight Training. (1)

Mathematics

Louis Pigno,* Head

Professors Burckel,* Cochrane,* Dressler,* Kapitanski,* Lee,* Miller,* Nicholls,* Peller,* Pigno,* Ramm,* Saeki,* Shult,* Smith,* Soibelman,* Strecker,* and Surowski;* Adjunct Professor Arhangel'skii; Associate Professors Bennett,* Chermak,* Crane,* Delgado,* Li,* Lin,* Maginnis,* Moore,* Muenzenberger,* Parker,* Wu,* Yetter,* and Zou;* Assistant Professors Auckly,* Nagy,* Vaninsky,* and Yang;* Emeriti: Professors Dixon,* Marr,* Stamey,* and Young;* Associate Professor Sloat;* Instructors Chatelain, Ratcliffe, Sitz, and Woldt.

Mathematics is the unparalleled model of an exact science, the epitome of creative art, and a language essential to understanding our modern technological world. Mathematicians design mathematical models, solve mathematical problems, and create new mathematics.

Mathematics graduates are sought both for their specialized knowledge and for their ability to think analytically and solve problems.

Requirements

Students may obtain either a bachelor of arts or a bachelor of science degree with a major in mathematics. For either degree, in addition to the general requirements of the university and college, mathematics majors must complete the following core courses:

MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
MATH 222	Analytic Geometry and Calculus III	4
MATH 240	Elementary Differential Equations	4
CIS 200	Fundamentals of Computer Programming	4
STAT 510	Introductory Probability and Statistics I	3
MATH 512	Introduction to Modern Algebra	3
	or	
MATH 511	Introduction to Algebraic Systems	3
MATH 633	Advanced Calculus I	3
	or	
MATH 520	Foundations of Analysis	3

For the B.A. degree, students must take 15 additional hours in mathematics numbered 400 or above; PHILO 510 may be substituted for 3 of these hours.

For the B.S. degree, students must take 15 additional hours in mathematics numbered 400 and above; MATH 570 may not be used to meet this requirement.

All students should enroll in MATH 199 in their first fall on campus.

Students may choose one of the following four programs, depending on their career interests.

Applied mathematics program

Students who intend to seek employment in business, government, or industry, should take Introduction to Modern Algebra and Advanced Calculus I (MATH 512 and 633). In addition, the following courses are recommended:

MATH 510	Discrete Mathematics	3
MATH 540	Advanced Ordinary Differential Equations	3
MATH 551	Applied Matrix Theory	3
MATH 632	Elementary Partial Differential Equations	3
MATH 634	Advanced Calculus II	3
MATH 655	Elementary Numerical Analysis I	3

Students also should take as many additional computer science and statistics courses as possible.

Pre-graduate program

Students who intend to enter graduate school to work toward an advanced degree in either pure or applied mathematics should take Introduction to Modern Algebra and Advanced Calculus I (MATH 512 and 633). In addition, the following courses are recommended:

MATH 515	Introduction to Linear Algebra	3
MATH 560	Introduction to Topology	3
MATH 634	Advanced Calculus II	3
MATH 721	Analysis I	3
MATH 722	Analysis II	3
MATH 730	Abstract Algebra I	3
MATH 731	Abstract Algebra II	3

Students also should take courses in related scientific fields, such as computer science and statistics. Students also should take at least one foreign language, preferably French, German, or Russian.

Actuarial mathematics program

Students who intend to become actuaries or work in the financial industry should take as many of the following courses as possible:

MATH 499	Actuarial Mathematics	3
MATH 510	Discrete Mathematics	3
MATH 512	Introduction to Modern Algebra	3
MATH 540	Ordinary Differential Equations	3
MATH 551	Applied Matrix Theory	3
MATH 633	Advanced Calculus I	3
MATH 655	Elementary Numerical Analysis	3
STAT 510	Introductory Probability and Statistics I	3
STAT 511	Introductory Probability and Statistics II	3
STAT 770	Theory of Statistics I	3
STAT 771	Theory of Statistics II	3

Students should also take courses in fields such as accounting, economics, and finance.

Teacher preparation program

Students who intend to become secondary school mathematics teachers may prepare for teacher certification through the College of Education while completing the requirements for a degree in mathematics. The following courses are recommended for such students:

MATH 312	Finite Applications of Mathematics	3
MATH 510	Discrete Mathematics	3
MATH 511	Introduction to Algebraic Systems	3
MATH 520	Foundations of Analysis	3
MATH 551	Applied Matrix Theory	3
MATH 570	History of Mathematics	3
MATH 572	Foundations of Geometry	3
MATH 591	Topics in Mathematics for Teachers	3

For specific certification requirements for secondary education, see the College of Education section of this catalog.

Students majoring in elementary education who wish to use mathematics as an area of concentration should consider taking their 15 hours of mathematics from among the following courses:

MATH 150	Plane Trigonometry	3
MATH 160	Introduction to Contemporary Mathematics	3
MATH 205	General Calculus and Linear Algebra	3
MATH 312	Finite Applications of Mathematics	3
MATH 313	Computational Number Theory	3
MATH 320	Mathematics for Elementary School Teachers	3
MATH 591	Topics in Mathematics for Teachers	3

Dual majors and dual degrees

Students may major in mathematics and another discipline within the College of Arts and Sciences. The degree requirements of both departments must be met.

Students may obtain a degree in mathematics and a second degree in a field in another college such as business administration or engineering. The degree requirements of both colleges must be met.

Information for nonmajors

Most colleges and departments require at least one mathematics course. Students should check with their advisors to determine which mathematics courses to take. Advisors are provided information that will aid them in using a student's ACT score to select the appropriate entry-level mathematics course. Advisors also have access to expanded mathematics course descriptions that will help them advise students.

Mathematics courses

MATH 010. Intermediate Algebra. (3) I, II, S. Preparatory course for MATH 100. Includes arithmetic (signed numbers, polynomials, algebraic fractions, exponents, and roots), solutions to equations (linear, quadratic, polynomial, root, and fractional), graphs (linear and quadratic), and geometry (area, perimeter, and the Pythagorean Theorem). Pr.: Two units of mathematics in grades 9–12 and a College Algebra PROB $\geq$ C of 43 or more on the ACT assessment; or a score of at least 7 on the mathematics placement test; or a score of at least 26 on the arithmetic placement test.

MATH 100. College Algebra. (3) I, II, S. Fundamental concepts of algebra; algebraic equations and inequalities; functions and graphs; zeros of polynomial functions; exponential and logarithmic functions; systems of equations and inequalities. Pr.: B or better in MATH 010; or two years of high school algebra and a College Algebra PROB $\geq$ C of 60 or more on the ACT assessment; or a score of at least 18 on the mathematics placement test.

MATH 101. The Metric System. (1) Intersession only, on sufficient demand. A systematic study of the metric system including historical background of various systems, structure of the metric system itself, and relation to existing systems; attention to competent use of metric terms in problem solving.

MATH 150. Plane Trigonometry. (3) I, II, S. Trigonometric and inverse trigonometric functions; trigonometric identities and equations; applications involving right triangles and applications illustrating the laws of sines and cosines. Pr.: C or better in MATH 100; or two years of high school algebra and a score of 25 or more on Enhanced ACT mathematics; or a score of at least 20 on the mathematics placement exam.

◆**MATH 160. Introduction to Contemporary Mathematics.** (3) This course explores ways in which mathematics is used to understand and make decisions in the contemporary world. Topics include organization and management of complex activities; collecting and describing data; mathematics of chance; social choice, voting systems, and fair division; geometry of growth and symmetry. Pr.: MATH 100.

MATH 199. Undergraduate Mathematics Seminar. (1) I. Topics of special interest to undergraduates in mathematics, including orientation to the mathematics curriculum, possible careers in mathematics, and cultural and professional aspects of mathematics.

MATH 205. General Calculus and Linear Algebra. (3) I, II. Introduction to calculus and linear algebra concepts that are particularly useful to the study of economics and business administration with special emphasis on working problems. Pr.: MATH 100 with C or better grade (College Algebra in the preceding semester is recommended).

MATH 210. Technical Calculus I. (3) I. A condensed course in analytic geometry and differential calculus with an emphasis on applications. Pr.: B or better in MATH 100 and C or better in MATH 150; or three years of college preparatory mathematics including trigonometry and a Calculus I PROB $\geq$ C of 55 or more on the ACT assessment; or a score of at least 26 on the mathematics placement test.

MATH 211. Technical Calculus II. (3) II. A continuation of MATH 210 to include integral calculus with an emphasis on application. Pr.: C or better in MATH 210.

MATH 220. Analytic Geometry and Calculus I. (4) I, II, S. Analytic geometry, differential and integral calculus of algebraic and trigonometric functions. Pr.: B or better in MATH 100 and C or better in MATH 150; or three years of college preparatory mathematics including trigonometry and Calculus I PROB $\geq$ C of 55 or more on the ACT assessment; or a score of at least 26 on the mathematics placement test.

MATH 221. Analytic Geometry and Calculus II. (4) I, II, S. Continuation of MATH 220 to include transcendental functions, techniques of integration, and infinite series. Pr.: C or better in MATH 220.

MATH 222. Analytic Geometry and Calculus III. (4) I, II, S. Continuation of MATH 221 to include functions of more than one variable. Pr.: C or better in MATH 221.

MATH 240. Elementary Differential Equations. (4) I, II, S. Elementary techniques for solving ordinary differential equations and applications to solutions of problems in science and engineering. Pr.: C or better in MATH 222.

MATH 312. Finite Applications of Mathematics. (3) II. Systems of equations, vector operations, linear algebra, and linear programming. Practice in setting up, solving, and interpreting mathematical models which arise in social sciences and business. Pr.: MATH 100.

MATH 313. Computational Number Theory. (3) I, II, S. Topics in number theory selected from: divisibility, primes, modular arithmetic and special types of numbers. Emphasis is on computations. Primarily for prospective elementary school teachers of mathematics. Pr.: Sophomore standing, MATH 100.

MATH 320. Mathematics for Elementary School Teachers I. (3) I, II. Mathematical problem solving and reasoning, development of whole number concepts and the whole number system, computation and estimation with whole numbers, number patterns and number theory, integers, fractions and rational numbers, decimals and real numbers, geometry and measurement. Pr.: MATH 100. For education majors only.

MATH 330. Intuitive Geometry. (3) Geometric figures and patterns, properties of geometric figures, transformation and coordinate geometry, measurement. Pr.: MATH 320.

MATH 395. Academic Excellence Workshop. (1–2) This course provides enriched supplementary instruction to selected students enrolled in selected lower-division courses. Pr.: Conc. enrollment in qualifying lower-division mathematics course and written permission of instructor.

◆**MATH 399. Honors Seminar in Mathematics.** (1–3) Pr.: Membership in honors program.

MATH 498. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

MATH 499. Undergraduate Topics in Mathematics. (Var.) I, II, S. Reading courses in advanced undergraduate mathematics. Pr.: Background of courses needed for topic undertaken and consent of instructor. Repeatable for credit.

MATH 506. Introduction to Number Theory. (3) II. Divisibility properties of integers, prime numbers, congruences, multiplicative functions. Pr.: MATH 221.

MATH 510. Discrete Mathematics. (3) I, II, S. Combinatorics and graph theory. Topics selected from counting principles, permutations and combinations, the inclusion/exclusion principle, recurrence relations, trees, graph coloring, Eulerian and Hamiltonian circuits, block designs, and Ramsey Theory. Pr.: Sophomore standing and MATH 221.

MATH 511. Introduction to Algebraic Systems. (3) I. Properties of groups, rings, domains, and fields. Examples selected from subsystems of the complex numbers, elementary number theory, and solving equations. Pr.: MATH 222.

MATH 512. Introduction to Modern Algebra. (3) I, II. Introduction to the basic algebraic systems, viz., groups, rings, integral domains, fields, elementary number theory. Special emphasis will be given to methods of theorem proving. Pr.: MATH 222.

MATH 515. Introduction to Linear Algebra. (2–3) I. Finite dimensional vector spaces; linear transformations and their matrix representations; dual spaces, invariant subspaces; Euclidean and unitary spaces; solution spaces for systems of linear equations. Pr.: MATH 512.

MATH 520. Foundations of Analysis. (3) A study of sets and sequences, neighborhood, limit point, convergence, and open and closed set in the real line and in the plane, the concept of continuous function. Pr.: MATH 222.

MATH 521. The Real Number System. (3) An extensive development of number systems, with emphasis upon structure. Includes systems of natural numbers, integers, rational numbers, and real numbers. Pr.: MATH 221.

MATH 540. Advanced Ordinary Differential Equations. (3) First order scalar equations; geometry of integral curves, symmetries and exactly soluble equations; existence; uniqueness and dependence on parameters with examples. Systems of first order equations, Hamilton's equations and classical mechanics, completely integrable systems. Higher order equations. Initial value problems for second order linear equations, series solutions and special functions. Boundary value problems with applications. Introduction to perturbation theory and stability. Pr.: MATH 240.

MATH 551. Applied Matrix Theory. (3) I, II. Matrix algebra, solutions to systems of linear equations, determinants, vector spaces, linear transformations, eigenvalues, linear programming, approximation techniques. Pr.: MATH 205 or 220.

MATH 560. Introduction to Topology. (3) An introduction to the basic topological concepts. Topological spaces, metric spaces, closure, interior, and frontier operators, subspaces, separation and countability properties, bases, subbases, convergence, continuity, homeomorphisms, compactness, connectedness, quotients and products. The course will include a brief introduction to proof techniques and set theory. Other topics in topology also may be included. Pr.: MATH 222.

MATH 570. History of Mathematics. (3) II. A survey of the development of mathematics from ancient to modern times. Cannot be used as part of the advanced mathematics needed for the B.S. degree in mathematics. Pr.: MATH 220.

MATH 572. Foundations of Geometry. (3) Euclidean, non-Euclidean, and finite geometries; role of axioms; practice proving theorems in a formal system; synthetic, metric, and transformation approaches to Euclidean geometry. Pr.: MATH 221.

MATH 591. Topics in Mathematics for Teachers. (1–3) I, II, S. Topics of importance for teachers of mathematics. May be repeated for credit. Pr.: Consent of instructor.

MATH 615. Advanced Engineering Mathematics I. (3) I. Vector calculus; higher dimensional calculus; topics in ordinary differential equations; complex analysis. Pr.: MATH 240 and 551.

MATH 616. Advanced Engineering Mathematics II. (3) II. Fourier series; Fourier and Laplace transforms; basic partial differential equations; basic calculus of variations. Pr.: MATH 240 and 615.

MATH 630. Introduction to Complex Analysis. (3) I, II. Complex analytic functions and power series, complex integrals. Taylor and Laurent expansions, residues, Laplace transformation, and the inversion integral. Pr.: MATH 240.

MATH 632. Elementary Partial Differential Equations. (3) I. Orthogonal functions, Fourier Series, boundary value problems in partial differential equations. Pr.: MATH 240.

MATH 633. Advanced Calculus I. (3) I. Functions of one variable: limits, continuity, differentiability, Riemann-Stieltjes integral, sequences, series, power series, improper integrals. Pr.: MATH 222.

MATH 634. Advanced Calculus II. (3) II. Functions of several variables: partial differentiation and implicit function theorems, curvilinear coordinates, differential geometry of curves and surfaces, vectors and vector fields, line and surface integrals, double and triple integrals, Green's Theorem, Stokes' Theorem, and Divergence Theorem. Pr.: MATH 633.

MATH 655. Elementary Numerical Analysis I. (3) I. Error analysis, root finding, interpolation, approximation of functions, numerical integration and differentiation, systems of linear equations. Pr.: MATH 221, a computer language, and either MATH 515 or 551.

MATH 656. Elementary Numerical Analysis II. (3) II. A continuation of MATH 655. Linear programming, numerical solutions of differential equations, and the use of standard packages for the solution of applied problems. Pr.: MATH 655 and 240.

MATH 670. Mathematical Modeling. (3) Introduction of modeling procedures. Case studies in mathematical modeling projects from physical, biological, and social sciences. Pr.: Four mathematics courses numbered 500 or above.

MATH 700. Set Theory and Logic. (3) An introduction to logic, mathematical proof, and elementary set theory; elementary logic, the basic constructions of set theory, relations, partitions, functions, cartesian products, disjoint unions, orders, and a construction of the natural numbers; also ordinal and cardinal numbers, the Axiom of Choice, and transfinite induction. Special emphasis will be given to proving theorems. Pr.: MATH 511 or 512.

MATH 701. Elementary Topology I. (3) I. Introduction to axiomatic topology including a study of compactness, connectedness, local properties, separation axioms, and metrizability. Pr.: MATH 633.

MATH 702. Elementary Topology II. (3) II. Path connectedness, fundamental groups, covering spaces, introduction to topological and differentiable manifolds. Pr.: MATH 701.

MATH 704. Introduction to the Theory of Groups. (3) Introduction to abstract group theory; to include permutation groups, homomorphisms, direct products, Abelian groups. Jordan-Holder and Sylow theorem. Pr.: MATH 512.

MATH 706. Theory of Numbers. (3) II. Divisibility, congruences, multiplicative functions, number theory from an algebraic viewpoint, quadratic reciprocity, Diophantine equations, prime numbers. Pr.: MATH 221 and either 511 or 512.

MATH 710. Introduction to Category Theory. (3) Categories, duality, special morphism, functors, natural transformations, limits and colimits, adjoint situations, and applications. Pr.: MATH 701 and 730.

MATH 711. Category Theory. (3) Set valued functors and concrete categories, factorization structures, algebraic and topological functors, categorical completions, Abelian categories. Pr.: MATH 710.

MATH 713. Advanced Applied Matrix Theory. (3) A development of the concepts of eigenvalues by considering applications in differential equations and quadratic forms and estimation problems. A discussion of the Jordan canonical form, functions of matrices, vector and matrix norms, convex sets. Selected topics from the theory and application of the simplex algorithm, Markov chains, Leslie population models, Leontieff input-output model. Pr.: MATH 551 or MATH 630.

MATH 721. Analysis I. (3) I, II, S. Metric spaces, limits, continuity, sequences and series, connectedness, compactness, Baire category, uniform convergence, theorems of Stone-Weierstrass and Arzela. Pr.: MATH 240 or graduate standing.

MATH 722. Analysis II. (3) II. Lebesgue and Riemann-Stieltjes integration on the real line, differentiation on the real line, elementary transcendental functions. Pr.: MATH 721.

MATH 730. Abstract Algebra I. (3) I. Groups, rings, fields, vector spaces and their homomorphisms. Elementary Galois theory and decomposition theorems for linear transformations on a finite dimensional vector space. Pr.: MATH 512 or consent of instructor.

MATH 731. Abstract Algebra II. (3) II. Continuation of MATH 730. Pr.: MATH 730 or consent of instructor.

MATH 740. Calculus of Variations. (3) On sufficient demand. Necessary conditions and the Euler-Lagrange equations, Hamilton-Jacobi theory, Noether's theorems, direct methods, applications to geometry and physics. Pr.: MATH 722 or equiv.

MATH 745. Ordinary Differential Equations. (3) I. First order equations and applications, second order equations and oscillation theorems, series solutions and special functions, Sturm-Liouville problems, linear systems, autonomous systems and phase plane analysis, stability, Liapunov's method, periodic solutions, perturbation and asymptotic methods, existence and uniqueness theorems. Pr.: MATH 240.

MATH 755. Dynamic Modeling Processes. (3) Topics to include equilibrium and stability, limit circles, reaction-diffusion, and shock phenomena, Hopf bifurcation and cusp catastrophes, chaos and strange attractors, bang-bang principle. Applications from physical and biological sciences and engineering. Pr.: MATH 240 and 551.

MATH 757. Mathematical Control Theory. (3) Mathematical analysis of dynamical systems governed by differential equations and their optimal processes, feedback and filtering. Topics include dynamical systems with controls, axioms of control systems, input-output behaviors, stability and instability, reachability and controllability, dynamic feedback and stabilization, optimal control processes, piecewise constant control and bang-bang principle, Pontryagin maximum principle, tracking, filtering. Pr.: MATH 560, 615.

MATH 760. Probability Theory. (3) An introduction to the mathematical theory of probability. Material covered includes combinatorial probability, random variables, independence, expectations, limit theorems, Markov chains, random walks, and martingales. Pr.: MATH 633 and STAT 510.

MATH 772. Elementary Differential Geometry. (3) Curves and surfaces in Euclidean spaces, differential forms and exterior differentiation, differential invariants and frame fields, uniqueness theorems for curves and surfaces, geodesics, introduction to Riemannian geometry, some global theorems, minimal surfaces. Pr.: MATH 240.

MATH 789. Combinatorial Analysis. (3) II, in alternate years. Permutations, combinations, inversion formulae, generating functions, partitions, finite geometries, difference sets, and other topics. Pr.: MATH 512.

MATH 791. Topics in Mathematics for Secondary School Teachers. (3) Topics of importance in the preparation of secondary school teachers to teach modern mathematics. May be repeated for credit.

Military Science

Lieutenant Colonel Robert Kennedy, Head

Assistant Professors Captain Adams, Captain Strong, and Captain Wallace; Instructors Master Sergeant Vasquez and Sergeant First Class Jackson.

The Army Reserve Officers' Training Corps program emphasizes the leadership and management skills required for success in military or civilian careers. Students find that their interaction with faculty improves self-confidence and overall academic performance. Army ROTC prepares students to serve as officers in the U.S. Army, Kansas Army National Guard, and U.S. Army Reserve.

The courses are open to all students. Students, both undergraduate and graduate, with two years remaining at K-State are eligible to pursue an officer commission through Army ROTC. Military science courses are credit-awarding courses and fulfill elective credit requirements in any degree program. Cadets may pursue any curriculum offered by the university.

The military science curriculum consists of the basic course, normally completed during the freshman and sophomore years, and the advanced course, oriented toward the junior and senior years. Texts and other materials required in ROTC courses are provided without cost.

Basic course

The basic course consists of a series of four 2-hour courses open to all students and may be counted as electives. Enrollment in basic course classes does not obligate a student to military service. Freshmen will normally enroll in MSCI 100 and 101 Sophomores will normally enroll in MSCI 201 and 202.

Advanced course

The U.S. Army ROTC advanced course is structured to develop the leadership potential of students choosing to pursue an officer commission. Prerequisites for the advanced course may be satisfied in a number of ways; specific questions on individual eligibility should be addressed to the department staff.

Students accepted into the advanced course agree to complete the curriculum and to accept an Active Army, U.S. Army Reserve, or Kansas Army National Guard commission, if offered. Each advanced course cadet receives a $150-per-month allowance during the school year in return for this agreement. A five-week advanced summer camp, with pay, is an integral part of the advanced course and normally is completed between the junior and senior years. Airborne, Air Assault, and the Northern Warfare training courses are U.S. Army schools available to qualified volunteers in addition to other training opportunities.

Basic camp

A five-week ROTC basic summer camp, with pay, is available. This allows ROTC participation by students who have not taken basic course classes. Application should be made to the Department of Military Science early in the spring semester. Students will attend ROTC Basic Camp during the summer. Satisfactory completion of the ROTC Basic Camp earns 4 hours academic credit and satisfies all prerequisites for entry into the advanced course. Attendance at the ROTC Basic Camp does not incur any military obligation.

Discharge of duty

Federal laws provide that ROTC graduates may discharge their military obligation in one of two ways: (1) two to four years of active duty with the remainder of the statutory eight-year obligation completed with the Army Reserve or National Guard organizations; or (2) three to six months active duty for training with the remainder of an eight-year obligation completed with Army Reserve or National Guard organizations. Preferences indicated by the graduate for a particular form of service are normally respected. Members of Army National Guard and Army Reserve units may enter the Simultaneous Membership Program. This program allows cadets to serve with a National Guard or Army Reserve unit while in Army ROTC, receiving both financial assistance and valuable experience.

Scholarships

The Army provides two-, three- and four-year scholarships to selected high school and college students. These scholarships provide full tuition and fees, an allowance for books and supplies, and $150 per school month. The scholarships are available on a competitive basis to all students, regardless of present enrollment in Army ROTC, who wish to receive commissions as officers. They must have two years remaining towards undergraduate or graduate programs. These scholarships, applied for during the spring semester, become effective the following fall. In addition to the Army ROTC scholarships, the Kansas Army National Guard offers one-, two-, three-, or four-year scholarships to selected high school and college students. The Kansas Army National Guard ROTC Scholarship is for Kansas residents and pays in-state tuition only.

Voluntary organizations

The department sponsors two voluntary organizations, KSU Battalion Honor Guard, and the ROTC Ranger Challenge Company. The Honor Guard performs both university and non-university ceremonies as well as home football and basketball games. The ROTC Ranger Company provides additional tactical training and leadership experience. It supplements ROTC classroom instruction and field training to better prepare cadets for Advanced Camp and to be Army officers.

Recommended courses

In recognition of leadership's many facets, the department requires that students enrolled in ROTC select from a number of university courses that complement the leadership program. One course each in written communication skills, human behavior, military history, computer literacy, and math are required. In addition to the required courses, one course each in national security policy and management is recommended. The majority of these courses may be applied as elective classes for the student's degree requirements and the leadership studies minor. A list of acceptable courses is available at the Department of Military Science.

Basic course

MSCI 100. Introduction to Military Science and ROTC. (V) I. Basic drill, physical fitness, rappelling, leadership reaction course, first aid, military presentations and Basic marksmanship. Two classroom hours, a required leadership lab, optional participation in a one hour session for physical fitness. Participation in a weekend exercise is optional, but highly encouraged.

MSCI 101. Introduction to Military Leadership. (V) II. Principles of effective leading. Communication skills to improve individual performance and group interaction. Relation of military organizational ethical values to the effectiveness of a leader. Two classroom hours, a required leadership lab, optional participation in a one hour session for physical fitness. Participation in a weekend exercise is optional, but highly encouraged.

MSCI 102. Basic Riflery. (1) I, II. Basic riflery and three-position match shooting. Includes brief introduction to U.S. Army ROTC program.

MSCI 107. Rappel Master Skills. (1) I, II. Students will be exposed to all the skills needed to conduct a rappelling session from a fixed facility. Skills to be taught will include: proper knots, anchoring techniques, rappel master duties and responsibilities, safety, equipment inspection, correct rappel procedures, and overall supervision of rappelling. Instructor permission required.

MSCI 201. Self/Team Development. (V) I. Ethics-based military leadership skills that develop individual abilities and contribute to building effective teams. Oral presentations, advanced first aid, land navigation and basic military tactics. Two classroom hours; a required leadership lab; optional, but encouraged, participation in two one-hour physical fitness sessions. Participation in a weekend exercise is optional, but highly encouraged.

MSCI 202. Individual/Team Military Tactics. (V) II. Introduction to individual and team aspects of military tactics in small unit operations. Radio communications, safety assessments, movement techniques. Two classroom hours; a required leadership lab; optional, but encouraged, participation in two one-hour physical fitness sessions. Participation in a weekend exercise is optional, but highly encouraged.

MSCI 206. Basic Camp (Camp Challenge). (V) S. A five-week summer camp conducted at Fort Knox, Kentucky. The U.S. Army provides pay, travel, lodging and meal costs. No military obligation incurred. Open only to students who have not completed all four of MSCI 101, 102, 201, and 202, and who pass a physical examination (paid for by ROTC).

MSCI 301. Leading Small Military Organizations I. (V) I. Series of practical opportunities to lead small groups in situations of increasing complexity. Uses small unit defensive tactics and opportunities to plan and conduct training. Three classroom hours, a leadership lab, participation in three one-hour physical fitness sessions. Participation in one weekend exercise is required, and one or two additional weekend exercises are offered for optional participation. Prerequisite: Completion of the basic course. Instructor permission required for enrollment.

MSCI 302. Leading Small Military Organizations II. (V) II. Continues methodology of MSCI 301. Military missions and task analysis. Ethical decision making and lessons from leadership case studies. Three classroom hours, a leadership lab, participation in three one hour physical fitness sessions. Participation in one weekend exercise is required; two other weekend exercises optional. Prerequisite: Completion of MSCI 301. Instructor permission.

MSCI 306. ROTC Advanced ROTC Training Camp (Camp Adventure). (V) S. A five-week camp conducted at Fort Lewis, Washington, by members of Kansas State University and other university Army ROTC faculty. The U.S. Army provides pay, travel, lodging and most meal costs. Highly structured and demanding, stressing leadership at small unit levels under varying, challenging conditions. Prerequisite: MSCI 301 and 302.

MSCI 351. Military Leadership Studies and Practical Applications. (V) I, II. Independent research, analysis and monthly discussion on related military topics. Small unit tactics and practical application of leadership skills and individual research projects. Three classroom hours per week, a leadership lab, participation in three one-hour physical fitness sessions. Participation in one weekend exercise is required; two other weekend exercises optional. Prerequisite: MSCI 301 or 302. Instructor permission.

MSCI 401. Leadership Challenges and Objective-Setting. (V) I. Plan, conduct, and evaluate activities of the ROTC cadet organization. Articulate goals, put plans into action to attain them. Assess organizational cohesion and develop strategies to improve it. Develop confidence in skills to lead people and manage resources. Learn and apply various Army policies and programs. Three classroom hours, a two-hour leadership laboratory, and weekly physical fitness activities. Cadets will also participate in a weekend field training exercise (FTX) and a dining-in. Prerequisite: MSCI 301 and 302 or department head permission.

MSCI 402. Transition to Lieutenant. (V) II. Continues the methodology from MSCI 401. Identify and resolve ethical dilemmas. Refine counseling and motivating techniques. Examine aspects of tradition and law as relate to leading as an officer in the U.S. Army. Prepare for a future as a successful U.S. Army lieutenant. Cadets will also participate in a weekend field training exercise (FTX) and a dining out or military ball .

MSCI 501. Advanced Transition to Lieutenant I. (V) I. Independent research, analysis and monthly discussion on related military topics. Personal, academic, and professional goals and objectives, development and maintenance of an officer evaluation report support form. Pr.: MSCI 401 and 402 or department head permission.

MSCI 502. Advanced Transition to Lieutenant II. (V) II. Independent research, analysis and monthly discussion on related military topics. Personal, academic, and professional goals and objectives, development, and maintenance of an officer evaluation report support form. Pr.: MSCI 501.

Modern Languages

Michael Ossar,* Head

Professors Corum,* Dehon,* and Ossar;* Associate Professors Benson,* Clark,* Garavito,* Ihrie,* Kolonosky,* McGraw,* Oropesa,* Sauter,* Shaw,* and Tunstall;* Assistant Professors Arnds,* Candia,* Martinez, and Miller;* Instructor Pigno; Emeriti: Alexander* and Driss.

All regular courses offered by the Department of Modern Languages may be taken by non-majors on an A/Pass/F basis, subject to the provisions of the university policy. Language laboratories are offered only on a Credit/No-Credit basis.

Students majoring in languages should enroll for the bachelor of arts degree.

Within the modern language major, French, German, and Spanish are offered; in highly unusual cases, a major in classics or Russian may be arranged.

Major

A major consists of classes above the 100 level taken in the same language. Students majoring in a must either (a) receive a grade of C or higher in all courses counted toward the major *or* (b) have a GPA of at least 2.50 in all courses counted toward the major. Note: Literature courses in translation may *not* be applied toward the major.

French: 32 hours
Required:
FREN 511 and FREN 512: Masterpieces of French Literature I and II
At least three 700-level literature courses

German: 30 hours
Required:
GERM 521 and GERM 522: Introduction to German Literature I and II
At least three 700-level literature courses

Spanish: 33 hours
Note: Elementary Conversation 3A (262) and 4A (264) do not count toward the major.

Required:
SPAN 570: Structure of the Spanish Language
SPAN 563 and 567: Introduction to the Literature of Spanish America and Spain (take in either order)
At least three 700-level courses, one each in Spanish literature, Spanish American literature, and Hispanic culture/language.

Major option "with distinction"

(3.5 GPA in all courses taken toward the major)

French: 38 hours
Required, in addition to the regular major:
Two additional courses, one of which must be on the 700 level.

German: 36 hours
Required, in addition to the regular major:
Two additional courses, one of which must be on the 700 level.

Spanish: 39 hours
Required, in addition to the regular major:
Spanish or Spanish American Civilization (SPAN 565 or 566)
One additional 700-level Spanish course, any category

Minor

A minor consists of classes above the 100 level taken in the same language. Students minoring in a language must either (a) receive a grade of C or higher in all courses counted toward the minor *or* (b) have a GPA of at least 2.50 in all courses counted toward the minor. The minor must include one literature course, except in Japanese. See recommended literature courses in parentheses:

Note: Literature courses in translation may *not* be applied toward the minor.

French:
20 hours (FREN 511 or 512, Masterpieces of Literature I or II)

German:
18 hours (GERM 521 or 522, Introduction to Literature I or II)

Japanese
18 hours (no literature course required)

Russian:
18 hours (RUSSN 551 or 552, Russian V or Survey of Literature)

Spanish:
21 hours (SPAN 574, Hispanic Readings)
Note: in Spanish, Elementary Conversation 3A (262) or 4A (264) do not count toward the minor.

Double majors and dual degrees

Students are encouraged to combine their modern language major with a major in a different field or college. To accomplish this, the student needs to complete the requirements for a B.A. in modern languages as well as those for the other major or degree.

Entering students who have had previous language experience and who plan to continue language study are required to take a language placement examination before or at the beginning of the first semester of language study. If there is any doubt as to proper placement, the head of the Department of Modern Languages should be consulted.

Students wishing to acquire retroactive credit for language proficiency gained before coming to K-State should consult with the head of the Department of Modern Languages.

Financial aid for undergraduates

The department offers scholarships to undergraduate majors and double majors for study at K-State or on the study abroad programs. For details, contact the head of the Department of Modern Languages.

Programs abroad

The department sponsors summer study programs in Cuernavaca, Mexico, and Grenada, Spain, and cooperates with German exchange programs in Germany and Switzerland. All inquiries should be addressed to the head of the department.

In addition, students may choose to participate in other programs, such as the International Student Exchange Program, the ERASMUS program, or The Community Service Program.

Honors program courses

◆**MLANG 297. Honors Introduction to the Humanities I.** (3) I. Study of selected major works of history, literature, and philosophy which have been of central importance in the Western cultural tradition. Considerable emphasis is placed on classroom discussion and writing interpretive essays. Limited to entering freshman students. Pr.: Consent of instructor. Same as ENGL 297, HIST 297, PHIL 297.

◆**MLANG 298. Honors Introduction to the Humanities II.** (3) II. Continuation of MLANG 297. Pr.: MLANG 297 or consent of instructor. Same as ENGL 298, HIST 298, PHIL 298.

◆**MLANG 399. Honors Seminar in Modern Languages.** (1–3) Reading and discussion of selected masterpieces of European literature in English translation. Open to non-language majors in the honors program.

MLANG 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

Modern language courses

MLANG 001. Study Abroad. (0)

MLANG 110. Hebrew for Beginners. (2) An introduction to the Hebrew language and the culture of the people who speak the language. This general introduction includes skill development in reading, writing, and speaking basic Hebrew. Designed specifically for English-speaking students. To be offered during Intersessions only.

MLANG 507. European Literature in Translation. (3) Selected readings in English from the major authors of Europe and the Spanish-speaking world.

MLANG 710. Introduction to Foreign Language Pedagogy. (3) The fundamentals of language learning as described by current research, and teaching strategies, that facilitate the acquisition of foreign language skills. Taught in English. Pr.: Acceptance as GTA or instructor in ML.

FREN 502. French Literature in Translation. (3) Selected readings in English from the works of such major French authors as Flaubert, Zola, Sartre, Camus, and Ionesco. Not accepted for major credit in French.

FREN 503. Black African Francophone Literature in Translation. (3) Selected readings in English from the works of important writers of black francophone Africa, including Ba, Beti, Lopes, and Sow Fall. Not accepted for credit in French major.

FREN 510. Modern French Culture. (2) French culture since World War II with special emphasis on social, economic, historical, and artistic developments of that period. Taught in English. Not accepted for major credit in French.

GRMN 503. German Literature in Translation. (3) Selected readings in English from such major German authors as Thomas Mann, Brecht, Hesse, Grass, and Kafka. Not accepted for major credit in German.

LATIN 501. Classical Literature in Translation. (3) Selected readings in English from the works of such major classical authors as Homer, Euripides, Vergil, Horace, and Terence.

RUSSN 250. Russian Culture and Civilization. (3) Russia's past and present in the light of principal ideologies with emphasis upon fine art, literature, music, religion, politics, and education. Equal time will be devoted to the Tsarist and Soviet periods. Knowledge of Russian is not required. Same as HIST 250.

RUSSN 504. Russian Literature in Translation: The Nineteenth Century. (3) Survey of the principal writers of Tsarist Russia with emphasis on Turgenev, Dostoevsky, Tolstoy, and Chekhov.

RUSSN 508. Russian Literature in Translation: The Soviet Period. (3) The development of Russian literature since the Revolution, with emphasis on Mayakovsky, Sholokov, Pasternak, and Solzhenitsyn.

SPAN 505. Spanish Literature in Translation. (3) Selected readings in English from the works of such major Spanish and Latin American authors as García Lorca, Borges, Neruda, and García Márquez. Not accepted for major credit in Spanish.

Arabic courses

ARAB 181. Arabic I. (4) Introduction to the structure of modern Arabic. Essentials of grammar, speaking, reading, and writing.

ARAB 182. Arabic II. (4) Continuation of Arabic I. Pr.: ARAB 181 or equiv.

ARAB 281. Arabic III. (4) Further development of language skills. Pr.: ARAB 182 or equiv.

ARAB 282. Arabic IV. (3) Continuation of Arabic III. Pr.: ARAB 281 or equiv.

ARAB 540. Special Studies in Arabic. (Var.) Pr.: Consent of the department head and instructor involved.

French courses

FREN 001. Orientation for Summer School Program. (0)

FREN 111. French I. (5) Introduction to the structure of modern French, emphasizing the spoken language with practice in the language laboratory.

FREN 112. French II. (5) Continuation of French I, completion of basic presentation of the structure of French. Emphasis on spoken language, use of language lab. Pr.: FREN 111 or equiv.

FREN 211. French III. (5) Continuation of French II, presentation of more advanced elements of the French language. Emphasis on spoken language, use of the language lab. Pr.: FREN 112 or equiv.

FREN 212. Elementary French Conversation IIIA. (2) Course not open to fluent speakers of French. Normally to be taken concurrently with French III. Pr.: FREN 112 or equiv.

FREN 213. French IV. (4) Continuation of French III, presentation of more advanced elements of the French language. Emphasis on spoken language, use of the language lab. Pr.: FREN 211 or equiv.

FREN 214. French Conversation IVA. (2) Continued practice in conversational French. Not open to fluent speakers of French. Normally to be taken concurrently with French IV. Pr.: FREN 211 or equiv.

FREN 398. Intermediate Studies in French. (1–6) Offered only to participants in study abroad programs. Prior consultation for approval is expected. At the discretion of the department, the course may be repeated for a maximum of 6 credit hours.

FREN 502. French Literature in Translation. (3) Selected readings in English from a wide range of literary works selected from various authors, genres, and periods. Not accepted for major credit in French.

◆**FREN 503. Black African Francophone Literature in Translation.** (3) Selected readings in English from the works of important writers of black francophone Africa, including Ba, Beti, Lopes, and Sow Fall. Not accepted for credit in French major.

FREN 510. Modern French Culture. (2) French culture since World War II with special emphasis on social, economic, historical, and artistic developments of that period. Taught in English. Not accepted for major credit in French.

◆**FREN 511. Masterpieces of French Literature I.** (3) The reading and discussion of major works of French literature from the Middle Ages to the end of the eighteenth century. Pr.: At least one course taught in French at the 500 level or equiv.

◆**FREN 512. Masterpieces of French Literature II.** (3) The reading and discussion of major works of French literature from the early nineteenth century to the present. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 513. French Composition and Grammar. (3) Review in depth of the structure of the language. Intensive practice in written and conversational French. Pr.: FREN 213 or equiv.

◆**FREN 514. French Civilization.** (3) Introduction to French culture with special emphasis on social and historical developments since World War II. Pr.: FREN 213 or equiv.

◆**FREN 516. Readings in French.** (3) Practice in reading a variety of literary, journalistic, and specialized texts from France and Francophone countries. Pr.: FREN 213 or equiv.

◆**FREN 517. Commercial French.** (3) Advanced grammar necessary for adequate oral and written expression in international business and diplomatic situations, including specialized terminology, conversation and discussion, and translation. Pr.: FREN 213.

FREN 518. Advanced French Conversation. (3) II. Practice in spoken French, with emphasis on idiomatic expression. Course not open to students whose primary language is French and whose competence has been demonstrated in the language at this level. Pr.: FREN 213.

FREN 519. Special Studies in French. (Var.) Pr.: FREN 213 or equiv. and consent of department head and instructor.

FREN 709. Medieval French Literature. (3) An introduction to literary forms, style, and thought from the eleventh century to the fifteenth century in France. Readings in modern French include *Chanson de Roland*, Chretien de Troyes *Roman de la Rose*, etc. Pr.: FREN 511 and 512 or equiv. background as determined by the modern language faculty.

FREN 710. Sixteenth-Century French Literature. (3) Reading and discussion of selected prose and poetry of the French Renaissance. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 711. Seventeenth-Century French Literature I. (3) I. Various literary forms of the French Baroque period. Reading of representative texts by Corneille, Pascal, Descartes, and others. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 712. Seventeenth-Century French Literature II. (3) II. Various literary forms of the French classical period. Reading of representative texts by Molière, Racine, Lafayette, La Fontaine, and others. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 713. Eighteenth-Century French Literature. (3) Critical study of the literature of the Enlightenment. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 714. Nineteenth-Century French Literature I. (3) A study of preromanticism and romanticism. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 715. Nineteenth-Century French Literature II. (3) A study of realism, naturalism, and symbolism. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 716. Twentieth-Century French Literature I. (3) The study of major themes and trends in the novel, drama, and poetry as reflected in representative works of such authors as Proust, Mauriac, Cocteau, Claudel, Valéry, and others. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 717. Twentieth-Century French Literature II. (3) Reading and analysis of recent innovations in literary theory and practice as found in the works of such authors as Sartre, Camus, Beckett, Ionesco, Robbe-Grillet, Sarraute, and others. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 718. The French Novel. (3) The development of the novel from the seventeenth century to the present, seen through selected masterworks. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 719. Advanced Spoken and Written French. (3) II. An advanced, intensive study of French prose style. Introduction to the techniques of translation from English to French. Intensive practice in oral style and diction. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 720. Seminar in French. (3) A seminar with variable topics. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 742. French-Speaking Culture and Literature in Second-Language Learning. (3) Analysis and interpretation of cultural and literary texts from French-speaking countries, with emphasis on the development of interpretive skills and materials, and their application to the French curriculum at all levels. May be repeated once with a change in focus and texts. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 799. Problems in Modern Languages. Pr.: At least one course taught in French at the 500 level or equiv.

German courses

GRMN 002. Orientation for Summer School Program. (0)

GRMN 119. German IL. (1) Language laboratory. Strongly recommended for students taking German I. Concurrent enrollment in German I required. For Credit/No Credit only. Credit given only upon receiving a passing grade for the concurrent section of German I.

GRMN 120. German IIL. (1) Language laboratory. Strongly recommended for students taking German II. Concurrent enrollment in German II required. For Credit/No Credit only. Credit given only upon receiving a passing grade for the concurrent section of German II.

GRMN 121. German I. (4) Introduction to the structure of modern German. Practice of the spoken language with additional experience in the language lab.

GRMN 122. German II. (4) Continuation and conclusion of the introduction to modern German, reading of selected prose texts. Pr.: GRMN 121 or equiv.

GRMN 221. German III. (4) Reading and discussion of a selection of modern German prose and review of the structure of German. Pr.: GRMN 122 or equiv.

GRMN 222. Elementary German Conversation IIIA. (2) Practice in beginning conversational German. Course not open to fluent speakers of German. Course normally taken concurrently with German III. Pr.: GRMN 122 or equiv.

GRMN 223. German IV. (3) Reading and discussion of modern German prose and review of the more difficult points of German grammar. Pr.: GRMN 221 or equiv.

GRMN 224. German Conversation IVA. (2) Continued practice in conversational German. Course not open to fluent speakers of German. Normally taken concurrently with German IV. Pr.: GRMN 221 or equiv.

GRMN 398. Intermediate Studies in German. (Var.) Offered only to participants in study abroad programs. Prior consultation for approval is expected. At the discretion of the department, the course may be repeated for a maximum of 6 credit hours.

GRMN 503. German Literature in Translation. (3) Selected readings in English from such major German authors as Thomas Mann, Brecht, Hesse, Grass, and Kafka. Not accepted for major credit in German.

GRMN 520. Readings in German. (3) Practice in reading a variety of literary, journalistic, and specialized texts. Pr..: GRMN 223 or equiv.

GRMN 521. Introduction to German Literature I. (3) Literary movements of the nineteenth century are introduced through the reading and discussion of texts in various forms and by representative authors. Pr.: GRMN 223 or equiv.

GRMN 522. Introduction to German Literature II. (3) Discussion of significant works of twentieth-century prose, poetry, and drama. Special emphasis is placed on the literature of recent decades. Pr.: GRMN 223 or equiv.

GRMN 523. German Composition. (3) A study of German syntax and exercises in composition. Pr.: GRMN 223 or equiv.

GRMN 524. German for Reading Knowledge I. (3) The grammar and syntax of German and the reading of basic material selected from modern German texts. Not for fulfillment of humanities distribution requirement.

GRMN 525. German for Reading Knowledge II. (3) Continued reading of material from modern German texts. Not for fulfillment of humanities distribution requirement. Pr.: GRMN 524 or equiv.

GRMN 526. Business German. (3) Advanced grammar necessary for adequate oral and written expression in international business and diplomatic situations, including specialized terminology, conversation and discussion, and translation. Pr.: GRMN 523.

GRMN 527. Advanced German Conversation. (3) Intensive practice in conversation. Course not open to students whose primary language is German and whose competence has been demonstrated in the language at this level. Pr.: GRMN 223 or equiv.

GRMN 529. Special Studies in German. (Var.) Pr.: Consent of department head and instructor involved.

GRMN 530. German Civilization. (3) II. The political and cultural development of the German-speaking peoples and their role and influence in the history of the Western world. Pr.: 18 hours of college German.

GRMN 721. German Classicism. (3) I. Reading and discussion of late eighteenth-century texts, including works by Goethe, Schiller, Hoelderlin, etc. Pr.: 21 hours of college German or equiv.

GRMN 722. German Romanticism. (3) II. A study of representative works of German romantic literature by such authors as Schlegel, Tieck, Eichendorff, Novalis. Pr.: 21 hours of college German or equiv.

GRMN 723. Goethe and Faust. (3) I. The writings of Goethe and his masterpiece, *Faust*. Pr.: 21 hours of college German or equiv.

GRMN 724. German Prose and Drama of the Nineteenth Century. (3) II. A consideration of post-romantic German literature with special emphasis on the novella. Authors including Grillparzer, Keller, and Meyer are discussed. Pr.: 21 hours of college German.

GRMN 725. Early Twentieth-Century German Literature. (3) II. A study of the drama and lyric of naturalism, neoclassicism, neo-romanticism, and expressionism. Pr.: 21 hours of college German.

GRMN 726. German Literature since 1945. (3) I. A discussion of the postwar writings of the Gruppe 47, Swiss playwrights, and others. Pr.: 21 hours of college German.

GRMN 727. The Modern German Novel. (3) II. Theory of the German novel with examples from authors such as Thomas Mann, Hesse, Grass, and others. Pr.: 21 hours of college German.

GRMN 728. History of the German Language. (3) I. A study of the development of the sounds, forms, and syntax of standard German. Fulfills distribution requirements for major. Pr.: Senior standing.

GRMN 729. Seminar in German. (3) A seminar with variable topics, including literature of social and political protest, Austrian and Swiss literature, literature of the Middle Ages, émigré literature, etc. Pr.: Senior standing or consent of instructor.

GRMN 731. Advanced Spoken and Written German. (3) Intensive practice in conversation and diction, with considerable practice in the writing of essays in German. Pr.: 24 hours of college German.

GRMN 732. Methods in German Literary Criticism. (3) Introduction to the various theories of literary analysis. Interpretation of representative German texts. Pr.: 24 hours of college German.

GRMN 733. The Enlightenment and Storm and Stress. (3) A study of representative texts from various movements in German literature and culture of the eighteenth century, including Empfindsamkeit and Rococo. Such authors as Gottsched, Klopstock, Lessing, Lichtenberg, Wieland, and the young Goethe and Schiller will be discussed. Pr.: 21 hours of college German.

GRMN 734. Literature of the German Democratic Republic. (3) A study of the literary developments within the German Democratic Republic. The course will consider the writers' role in a socialist society and their impact upon the cultural scene. Readings will include representative works from all genres. Pr.: 21 hours of college German.

GRMN 735. German Lyric Poetry. (3) A study of German lyric poetry from the Middle Ages to the present with special emphasis on the historical development of such genres as the lied, sonnet, and ballad. In addition to learning basic interpretive techniques intrinsic to poetry, the student will learn to identify the literary periods. Pr.: 21 hours of college German.

GRMN 740. German Culture and Literature in Second-Language Learning. (3) Analysis and interpretation of cultural and literary texts from German-speaking countries, with emphasis on the development of interpretive skills and materials, and their application to the German curriculum at all levels. May be repeated once with a change in focus and texts. Pr.: 24 credits in German at 200 or above or equiv.

GRMN 799. Problems in Modern Languages. (Var.)

Italian courses

ITAL 129. Italian IL. (1) Language laboratory. Strongly recommended for students taking Italian I. Concurrent enrollment in Italian I required. For Credit/No Credit only. Credit given only upon receiving a passing grade for the concurrent section of Italian I.

ITAL 130. Italian IIL. (1) Language laboratory. Strongly recommended for students taking Italian II. Concurrent enrollment in Italian II required. For Credit/No Credit only. Credit given only upon receiving a passing grade for the concurrent section of Italian II.

ITAL 131. Italian I. (4) Introduction to the structure of modern Italian. Offered in alternate years.

ITAL 132. Italian II. (4) Continuation and completion of the study of modern Italian grammar, using the facilities of the language laboratory for audiolingual practice. Pr.: ITAL 131 or equiv. Offered in alternate years.

ITAL 231. Italian III. (4) Grammar review and reading selections from Italian literature. Pr.: ITAL 132 or equiv. Offered in alternate years.

ITAL 232. Italian IV. (3) Selective review of grammar and reading of examples of modern Italian literature. Pr.: ITAL 231 or equiv. Offered in alternate years.

ITAL 520. Special Studies in Italian. (Var.) Pr.: Consent of department head and instructor involved.

Japanese courses

JAPAN 191. Japanese I. (4) Introduction to the fundamental linguistics and cultural characteristics of the Japanese language and its writing systems (Hiragona, Katakana, and Kanji).

JAPAN 192. Japanese II. (4) Continuation of Japanese I. Development of functional skills for familiar situations. Pr.: JAPAN 191 or equiv.

JAPAN 291. Japanese III. (5) Introduction to grammatical patterns and sentence structure. Extensive practice of spoken and written Japanese, both in the classroom and the-language laboratory. Pr.: JAPAN 192 or equiv.

JAPAN 292. Japanese IV. (3) Continuation of Japanese III. Enhancement of speaking and writing skills, and reading and listening comprehension. Practice in the language learning center included. Pr.: JAPAN 291 or equiv.

JAPAN 591. Japanese V. (4) Development of communication skills through application activities such as problem-solving tasks and role plays. Enhancement of vocabulary, structures, and their usage. Emphasis on extended discourse. Practice in the language learning center included. Pr.: JAPAN 292 or equiv.

JAPAN 592. Japanese VI. (4) Continuation of Japanese V. Development of functional skills for general situations. Completion of the presentation of major 500 Kanji characaters and 1,800 Kanji compounds. Practice in the language learning center included. Pr.: JAPAN 591 or equiv.

JAPAN 599. Special Studies in Japanese. (Var.) Pr.: Consent of department head and instructor.

Latin courses

LATIN 105. Latin and Greek for Scientists. (1) The course is designed specifically to provide students of the biological sciences with a background in Latin and Greek roots of scientific terms. Emphasis on prefixes, suffixes, and word derivations. No prior knowledge of either Latin or Greek is required. Course may not be applied toward the fulfillment of either language or humanities requirements for any degree.

LATIN 141. Latin I. (4) An introductory study of the structure of Latin. Offered in alternate years.

LATIN 142. Latin II. (4) Continuation and completion of the study of the structure of Latin. Pr.: LATIN 141. Offered in alternate years.

LATIN 241. Latin III. (4) Review of Latin grammar and reading of an anthology of Roman prose and poetry. Pr.: LATIN 142. Offered in alternate years.

LATIN 242. Latin IV. (3) Continuation of the study of Latin syntax and grammar, based upon the reading of Roman prose and poetry. Pr.: LATIN 241. Offered in alternate years.

LATIN 501. Classical Literature in Translation. (3) Selected readings in English from the works of such major classical authors as Homer, Euripides, Vergil, Horace, and Terence.

LATIN 549. Special Studies in Latin. (Var.) Pr.: Consent of the department head and instructor involved.

Linguistics courses

LG 730. Foundations of Semiotics. (3) II. The general theory of signs; detailed classification of signs and examination of several semiotic systems such as language, literature, culture, and society. The semiotics of communication and signification. Pr.: Senior standing.

Undergraduate and graduate credit

LG 600. Principles of Linguistics. (3) Same as LING 600 and ENGL 600.

LG 601. General Phonetics. (3) Same as LING 601 and ENGL 601.

LG 602. Historical Linguistics. (3) Same as LING 602 and ENGL 602.

LG 603. Topics in Linguistics. (3) Same as LING 603 and ENGL 603.

LG 783. Phonology I. (3) Same as LING 783 and ENGL 783.

LG 785. Syntax I. (3) Same as LING 785 and ENGL 785.

LG 792. Field Methods in Linguistics. (3) Same as LING 792.

Portuguese courses

PORT 163. Portuguese I. (4) I. Introduction to the structure of the Portuguese language, stressing Brazilian usage, and emphasizing oral and written skills.

PORT 164. Portuguese II. (4) II. Continuation of Portuguese I, completion of the basic presentation of structural and linguistic principles of the Portuguese language. Pr.: PORT 163 or equiv. course.

PORT 266. Portuguese III. (4) I. Intensive review of syntax and a comprehensive structural review of modern Portuguese, stressing Brazilian usage, with emphasis on composition and conversation. Pr.: PORT 164 or equiv.

PORT 267. Portuguese IV. (3) II. Reading and discussion of selections from contemporary prose, emphasizing Brazilian writings, and review of grammatical structures as needed. Pr.: PORT 266 or equiv.

PORT 572. Special Studies in Portuguese. (1–3) Pr.: 15 hours of Portuguese and consent of instructor.

Russian courses

RUSSN 149. Russian IL. (1) Language laboratory. Strongly recommended for students taking Russian I. Concurrent enrollment in Russian I required. For Credit/No Credit only. Credit given only upon receiving a passing grade for the concurrent section of Russian I.

RUSSN 150. Russian IIL. (1) Language laboratory. Strongly recommended for students taking Russian II. Concurrent enrollment in Russian II required. For Credit/No Credit only. Credit given only upon receiving a passing grade for the concurrent section of Russian II.

RUSSN 151. Russian I. (4) I. Introduction to the structure of modern Russian. Emphasis on the sounds of Russian, the use of the Cyrillic alphabet, and oral drills with added practice in the language laboratory.

RUSSN 152. Russian II. (4) II. Continuation of the study of Russian grammar and oral communication. Pr.: RUSSN 151 or equiv.

RUSSN 250. Russian Culture and Civilization. (3) Russia's past and present in the light of principal ideologies with emphasis upon fine art, literature, music, religion, politics, and education. Equal time will be devoted to the Tsarist and Soviet periods. Knowledge of Russian is not required. Same as HIST 250.

RUSSN 251. Russian III. (4) I. Completion of the study of Russian grammar. Reading of selected prose on the intermediate level. Pr.: RUSSN 152 or equiv.

RUSSN 252. Russian IV. (3) II. Intensive review of Russian grammar. Exercises in reading selected modern Russian texts in the original. Pr.: RUSSN 251 or equiv.

RUSSN 398. Intermediate Studies in Russian. (Var.) Offered only to participants in study abroad programs. Prior consultation for approval is expected. At the discretion of the department, the course may be repeated for a maximum of 6 credit hours.

RUSSN 504. Russian Literature in Translation: The Nineteenth Century. (3) Survey of principal writers of Tsarist Russia with emphasis upon Turgenev, Dostoevsky, Tolstoy, and Chekhov.

RUSSN 508. Russian Literature in Translation: The Soviet Period. (3) The development of Russian literature since the Revolution, with emphasis upon Mayakovsky, Sholokhov, Pasternak, and Solzhenitsyn.

RUSSN 551. Russian V. (3) Reading of Russian short stories of the nineteenth and twentieth centuries, including works by Pushkin, Lermontov, Dostoevsky, and Chekhov.

RUSSN 552. Survey of Russian Literature. (3) A history of Russian literature from its beginnings until the present, with emphasis on the works of the nineteenth century, including those of Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, and Tolstoy.

RUSSN 553. Russian Conversation and Composition. (3) Discussion in Russian. Extensive practice in writing Russian compositions.

RUSSN 559. Special Studies in Russian. (Var.) Pr.: Consent of department head and instructor involved.

South Asian languages courses

URDU 171. Hindi/Urdu I. (4) I. Introduction to the structure of Hindi and Urdu, two languages which are nearly identical in the grammatical structure of their everyday spoken style. Hindi is the dominant language of northern India. Urdu is the national language of Pakistan, also understood throughout the Hindi area.

URDU 172. Hindi/Urdu II. (4) II. Continuation of Hindi/Urdu I with introduction of the Devanagari (Hindi and Sanskrit) script. Pr.: URDU 171.

URDU 273. Hindi/Urdu III. (4) I. Continuation of Hindi/Urdu II with gradual transition to more formal styles of language. Pr.: URDU 172.

URDU 274. Hindi/Urdu IV. (4) II. Continuation of Hindi/Urdu III with readings in Hindi or Urdu literature according to needs of students. Pr.: URDU 273.

URDU 575. Hindi/Urdu V. (4) I, II, S. Individual study in Hindi or Urdu. Readings, composition, or conversational practice relevant to the student's interests and disciplinary needs. May be repeated for credit. Pr.: URDU 274.

URDU 799. Problems in Modern Languages. (Var.)

Spanish courses

SPAN 003. Orientation for Summer School Abroad Program in Cuernavaca, Mexico. (0)

◆**SPAN 161. Spanish I.** (5) Basic introduction to the structures of the Spanish language, emphasizing practice in the four skills: listening, speaking, reading, writing. Includes selected aspects of the cultures of Spanish speakers and practice in the language learning center.

◆**SPAN 162. Spanish II.** (5) Continuation of Spanish I, Basic introduction to the structures of the Spanish lanugage, emphasizing practice in the four skills: listening, speaking, reading, writing. Includes selected aspects of the cultures of Spanish speakers and practice in the language learning center. Pr.: SPAN 161 or equiv.

◆**SPAN 261. Spanish III.** (5) Review of structures of the Spanish language, emphasizing intermediate-level practice in the four skills: listening, speaking, reading, writing. Includes selected aspects of the cultures of Spanish speakers and practice in the language learning center. Pr.: SPAN 162 or equiv.

SPAN 262. Elementary Spanish Conversation IIIA. (2) Practice in beginning conversational Spanish. Emphasis on oral communication within the classroom. Course not open to fluent speakers. Should be taken concurrently with Spanish III.

◆**SPAN 263. Spanish IV.** (4) Continuation of Spanish III, Review of structures of the Spanish language, emphasizing intermediate-level practice in the four skills: listening, speaking, reading, writing. Includes selected aspects of the cultures of Spanish speakers and practice in the language learning center. Pr.: SPAN 261 or equiv.

SPAN 264. Elementary Spanish Conversation IVA. (2) Continuation of Elementary Spanish Conversation IIIA. Should be taken concurrently with Spanish IV.

SPAN 398. Intermediate Studies in Spanish. (Var.) Offered only to participants in study abroad programs. Prior consultation for approval is expected. At the discretion of the department, the course may be repeated for a maximum of 6 credit hours.

SPAN 505. Spanish Literature in Translation. (3) Selected readings in English from the works of such major Spanish and Latin American authors as García Lorca, Borges, Neruda, and García Márquez. Not accepted for major credit in Spanish.

SPAN 550. Introduction to Literature of Spanish. (3) An introduction to literary terminology and its practical application for analyzing and interpreting texts from Spain and Spanish America. Strongly recommended for students planning to take SPAN 563 or SPAN 567. Pr.: SPAN 564 or equiv.

SPAN 563. Introduction to the Literature of Spanish America. (3) Reading and analysis of representative works of Spanish-American literature from the colonial period to the present. Pr.: Minimum of 3 hours at 500 level or equiv. background as determined by modern languages faculty.

SPAN 564. Spanish Composition and Grammar. (3) I. The grammar and syntax of modern Spanish. Course not open to those students whose primary language is Spanish and whose competence has been demonstrated in the language at this level. Pr.: SPAN 263 or equiv. facility as determined by modern languages faculty.

SPAN 565. Spanish Civilization. (3) I. Survey of Spanish culture and civilization from its beginnings to the present; emphasis on Spanish contributions over the centuries in the humanistic field. Pr.: SPAN 263 or equiv. facility as determined by the modern languages faculty.

SPAN 566. Hispanic–American Civilization. (3) II. Survey of Spanish-American culture and civilization from 1492 to the present. Pr.: SPAN 263 or equiv. facility as detrmined by modern languages faculty.,

SPAN 567. Introduction to the Literature of Spain. (3) Reading and analysis of representative works of Spanish literature from its beginnings to the present. Pr.: Minimum of 3 hours at 500 level or equiv. background as determined by modern languages faculty.

SPAN 569. Special Studies in Spanish. (Var.) Pr.: Consent of department head and instructor involved.

SPAN 570. Structure of the Spanish Language. (3) Introductory description of the grammatical structure of Spanish with its main components: phonological, morphological, syntactic and semantic. Spanish pronunciation, dialectal variation and some other aspects are analyzed in contrast. Required of all Spanish majors. Pr.: SPAN 564 or equiv. facility as determined by modern languages faculty.

SPAN 571. Advanced Spanish Conversation. (3) II. Intensive practice in conversation. Course not open to those students whose primary language is Spanish and whose competence has been demonstrated in the language at this level. Pr.: SPAN 263 or equiv. facility as determined by modern languages faculty.

SPAN 573. Spanish for Professions. (3) Advanced grammar necessary for adequate oral and written expression in selected professional disciplines (such as business, health professions, and human services), including specialized terminology, conversation and discussion, and translation. Pr.: SPAN 564 or equiv. facility as determined by modern languages faculty.

SPAN 574. Hispanic Readings. (3) Practice in reading a variety of literary, journalistic, and specialized texts. Pr.: SPAN 263 or equiv. background as determined by modern languages faculty.

SPAN 750. Spanish–American Literature from its Origins to the Nineteenth Century. (3) Analysis and discussion of literary manifestations from pre-Columbian civilizations, the Spanish colonies, and independent nations. Literary movements include early forms of narrative, the Baroque, Neo-Classicism, and Romanticism. Texts by writers such as Aztec poets, Spanish chroniclers, Sor Juana, Fernandez de Lizardi, Hernández, Isaacs, Gomez de Avellaneda, Echeverría, and others. Pr.: SPAN 563 and 567 or equiv. facility determined by modern languages faculty.

SPAN 751. Spanish–American Literature: Late Nineteenth Century to Early Twentieth Century. (3) Analysis and discussion of significant literary trends and movements, including Realism, Naturalism, "Modernism," and the Avant-Garde, including writers such as Blest Gana, Cambaceres, Martí, Darío, Güiraldes, Azuela, Gallegos, Rivera, and Bombal. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 752. Contemporary Spanish–American Narrative. (3) Analysis and discussion of the narrative from the period of the Boom to the present. Includes writers such as Borges, Sábato, Cortázar, García Marquez, Vargas Llosa, Fuentes, Allende, and Valenzuela. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 755. Spanish–American Drama. (3) Analysis and discussion of the drama of Spanish-speaking American nations, with emphasis on the Twentieth Century. Readings from such leading playwrights as Usigli, Marquez, Carballido, Triana, Gambaro, Lenero, and Castellanos. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 756. Nineteenth-Century Spanish Literature. (3) The reading and study of nineteenth-century Spanish literature: drama, essay, novel, poetry, and short story. Such authors as Larra, Zorrilla, el Duque de Rivas, Espronceda, Tamayo y Baus, Echegaray, Bécquer, and Pérez Galdós will be discussed. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 761. Medieval and Renaissance Literature. (3) Reading and interpretation of the principal literary works of Medieval and Renaissance Spain, from the jarchas and the *Poema de Mío Cid* to the cronicas and *La Celestina,* studied within the historical and cultural context of each. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 763. Twentieth-Century Spanish Literature. (3) The major writers and directions of twentieth-century literature in Spain. Analysis and discussion of the works of such representative authors as Unamuno, Jiménez, Guillén, Lorca, Cela, Buero Vallejo, and Delibes. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 764. Spanish Literature of the Golden Age. (3) Reading and analysis of the works of such major writers as Lope de Vega, Tirso de Molina, Calderón de la Barca, Garcilaso, Fray Luis de León, San Juan de la Cruz, Góngora, and Quevedo, as well as selected works from the picaresque tradition. Pr.: SPAN 563 and 567 or equiv. facility as determined by modern languages faculty.

SPAN 766. Spanish Poetry. (3) The development of the poetry of Spain from the Middle Ages to the 20th Century. Includes poets such as Berceo, the romanceros, Manrique, Gongora, Quevedo, Espronceda, Becquet, Machado, Lorca, Guillen, Orero, Fuertes, Rodriguez, and Rossetti. Taught as a seminar. Pr.: SPAN 563 and 567 or equiv. facility as determined by modern languages faculty.

SPAN 767. Spanish–American Poetry. (3) The development of poetry from its early pre-Columbian manifestations to the present time with emphasis on the twentieth century. Includes poets such as Sor Juana, Marti, Dario, Borges, Vallejo, Neruda, Paz, Storni, Agustini, and Castellanos. Taught as a seminar. Pr.: SPAN 563 and 567 or equiv. facility as determined by modern languages faculty.

SPAN 770. Introduction to Hispanic Linguistics. (3) Linguistic theory as it is applied to the Spanish language. Linguistic topics include syntax, phonology, morphology, semantics, sociolinguistics, and psycholinguistics. Other topics include dialectology, bilingualism, and the creative use of language. Of interest to students of both language acquisition and literature. Taught in Spanish. Pr.: SPAN 564 and 567 or equiv. facility as determined by modern languages faculty.

SPAN 771. Introduction to Spanish Translation. (3) Translation theory and practice as applied to Spanish. Translations from Spanish to English and English to Spanish, involving unique problems related to science, business, reporting, and literature. Pr.: 6 hours of college Spanish at the 500 level or equiv. facility as determined by modern languages faculty.

SPAN 772. The Hispanic World Today. (3) An investigation of selected social, political, and humanistic aspects of contemporary Hispanic culture. Pr.: Minimum of 6 hours of college Spanish at the 500 level or equiv. background as determined by modern languages faculty.

SPAN 775. Cervantes. (3) Reading of the works of Cervantes and discussion of the literary and cultural background of the period. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 777. Spanish and Spanish–American Culture and Literature in Second-Language Learning. (3) Analysis and interpretation of cultural and literary texts from Spanish-speaking countries, with emphasis on the development of interpretive skills and materials, and their application to the Spanish curriculum at all levels. May be repeated once with a change in focus and texts. Pr.: Minimum of 6 hours of college Spanish at the 500 level or equiv. background as determined by modern languages faculty.

SPAN 779. Seminar in Spanish. (3) A seminar with variable topics. Pr.: Senior standing or consent of the instructor.

SPAN 799. Problems in Modern Languages. (Var.)

Music

Jack Flouer,* Head

Professors R. Edwards,* Flouer,* Fallin,* Jackson,* Sloop,* Sutton,* and Walker;* Associate Professors A. Cochran,* Cooper,* Littrell,* Mortenson,* Parker,* Polich, Royse,* Sidorfsky,* and Tracz;* Assistant Professors Brumbeloe,* M.L. Cochran, J. Edwards, Ganz, Houser, and Wilson; Instructors Di Sanza, Pittman, and Wingfield; Adjunct Betton; Emeriti: Professors Brookhart,* Funkhouser,*Langenkamp,* Steinbauer,* W. Walker,* and White;* Assistant Professors Caine* and M. Walker.

The Department of Music is a member, with institutional accreditation, of the National Association of Schools of Music.

Curricula in music education and performance with majors in music theatre, composition, voice, piano, organ, strings, woodwind, percussion, and brass instruments are offered. Courses in music are available to any student enrolled in the university, subject to prerequisites listed in the course descriptions. Courses in performance do not require prerequisites for those not majoring in music; however, availability of instructor and fees for nonmajors are factors in securing performance instruction. This elective credit cannot be used later toward a music degree unless it meets the requirements of that course as they apply to those majoring in music. No more than two credits a semester will be granted for performance as an elective.

Entrance requirements

New and transfer students

Preliminary placement examinations in piano, the performance major, and theory must be taken by all students majoring in music regardless of the curriculum selected. Students will be advised as to the most appropriate field of concentration and the proper level of study as a result of examination.

Divisional hearings will determine the number of upper-level hours that will be accepted for transfer students.

Students who, on the basis of auditions in their major performance area, have been determined by the faculty to perform at a level lower than that acceptable for MUS 255 will not be allowed to declare a major in music. They will be required to enroll in MUS 251 Pre-Applied Study until such time that their proficiency level is acceptable for MUS 255.

If, on the basis of audition, a music major is determined by the faculty to lack sufficient proficiency to be a member of a major performing ensemble that student must enroll in Voice Class. A maximum of two semesters of Voice Class may be substituted for the major ensemble requirements.

Music minor

MUSIC 201	Styles II, Textures	4
MUSIC 202	Styles, III, Classical	4
MUSIC 255	L-D Perf	4
Major performing ensemble (MUSIC 111, 115, 116, 117, 130, 135, 140, 400, 401, 402, 403, 404, 408, 409, 411)		4
Guided electives*		3–4

**Guided electives:*

MUSIC 213 Styles, IV, Romantic

or

Any music history course or literature course above 300 for which MUSIC 201 or 250 is a prerequisite.

or

ANTH 515, 516, 517

Bachelor of arts

120 hours required for graduation

The bachelor of arts with a major in music emphasizes the liberal arts tradition. The program provides enough flexibility in electives for students to meet other preprofessional requirements, and it thus may appeal to students whose professional goals do not terminate with music. The minimum requirement in music is 48 hours, including the following:

MUSIC 201	Styles II, Textures of Music	4
MUSIC 202	Styles III, The Classical Period	4
MUSIC 213	Styles IV, The Romantic Period	4
MUSIC 218	Aural Skills Proficiency	0
MUSIC 398	Musical Style of the Baroque	4
MUSIC 406	Musical Style to 1600 (Medieval and Renaissance)	4
MUSIC 407	Musical Style of the Twentieth Century	4

Recital attendance is required for seven semesters (transfer students' records will be evaluated). The major program of music leading to the degree bachelor of arts may be elected with an emphasis in the areas of music literature, composition, or performance.

The music literature area requires 8 hours of electives in music history and music literature. In addition, 8 semester hours in a single performance area are required, of which half must be from the 400 level.

The composition area calls for MUSIC 521 (three hours), 615, 616, 714, 3 semester hours in music literature, and 8 semester hours of piano, of which half must be from the 400 level.

The performance area calls for MUSIC 615 and 616 plus 16 hours of an instrument or voice, of which half must be from the 400 level.

Participation in a music organization (instrumental or choral, depending on the major performance area) is required each semester, and the piano proficiency requirement must be passed before graduation.

Bachelor of music

129–134 hours required for graduation

A four-year program is offered with concentrations in piano, organ, voice, strings, wind or percussion instruments, music theatre, and composition.

The general education requirements for this degree are listed in the College of Arts and Sciences section of this catalog.

The basic requirements for all options are:

Basic requirements

MUSIC 201	Styles II, Textures of Music	4
MUSIC 202	Styles III, The Classical Period	4
MUSIC 213	Styles IV, The Romantic Period	4
MUSIC 218	Aural Skills Proficiency	0
MUSIC 398	Musical Styles of the Baroque Period	4
MUSIC 406	Musical Styles to 1600 (Medieval and Renaissance)	4
MUSIC 407	Musical Styles of the Twentieth Century	4
MUSIC 473	Seminar in Comprehensive Musicianship	2
MUSIC 417	Conducting	2
Music elective		2
Junior recital		0
Senior recital		0
MUSIC 050	Recital Attendance (7 semesters)	0
MUSIC 060	Piano Proficiency	0

Additional requirements for music theatre option

MUSIC 255	Voice	8
MUSIC 455	Voice	11
MUSIC 285	Italian Diction	1
MUSIC 287	German Diction	1
	or	
MUSIC 465	French Diction	1
Major performing organization		4
MUSIC 475	Opera Workshop	4
MUSIC 492	Methods and Materials for the Studio	
	or	
MUSIC 706	Song Literature	2–3
MUSIC 650	History of Opera	3
MUSIC 206	Piano Class I	1
	and	
MUSIC 207	Piano Class II	1
Music electives		2
THTRE 260	Stage Movement	3
THTRE 261	Fundamentals of Acting	3
THTRE 268	Techniques of Makeup	1
THTRE 361	Intermediate Acting	3
THTRE 368	Fundamentals of Technical Productions	3
THTRE 211	Drama Participation	1
THTRE 761	Advanced Acting	3
Theatre electives selected from the following		3
THTRE 161	Fundamentals of Improvisation	
	or	
THTRE 560	Advanced Stage Movement	
	or	
THTRE 664	Creative Dramatics	
DANCE 165	Ballet I	2
DANCE 120	Modern Dance	2
	or	
DANCE 171	Jazz Dance	
Dance electives		2
Secondary modern language		4

Additional requirements for vocal performance

MUSIC 255	Voice	8
MUSIC 455	Voice	14
Piano Class or Piano		4
MUSIC 474	Problems in Musical Style and Music Pedagogy	2
MUSIC 615	Canon and Fugue	2
MUSIC 616	Twentieth Century Counterpoint	2
MUSIC 492	Methods and Materials of the Studio	2
Major performing organization each semester		
Diction		4
Vocal ensemble or Opera Theatre		4
Additional music electives		3
Primary modern language (1 additional course)		4
Secondary modern language (1 course)		4

Additional requirements for instrumental performance

(keyboard, strings, wind, and percussion instruments):

MUSIC 255		8
MUSIC 455		14
Major performing organization each semester		
Instrumental ensemble		4
Secondary performance area		4
MUSIC 474	Problems in Musical Style and Music Pedagogy	2
MUSIC 714	Advanced Orchestration	2
MUSIC 615	Canon and Fugue	2
MUSIC 616	Twentieth Century Counterpoint	2
Additional music electives		3
Additional non-music electives		10

Additional requirements for composition

Major performance area (If piano is major area then 4 hours of a secondary performance area)		4
MUSIC 255 and/or 455	Piano	8
MUSIC 474	Problems in Musical Style and Music Pedagogy	2
MUSIC 714	Advanced Orchestration	2
MUSIC 521	Composition	12
MUSIC 615	Canon and Fugue	2
MUSIC 616	Twentieth Century Counterpoint	2
MUSIC 631	Technology of the Electronic Music Studio	2
MUSIC 632	Digital Sound Synthesis	2
Major performing organization each semester		
Additional music electives		7
Additional non-music electives		10

Bachelor of music education

136–139 hours required for graduation, depending on emphasis

The program of study leading to this degree is a nine-semester curriculum designed to prepare music teachers for grades K–12. With careful planning and enrollment during summer session(s) all requirements may be completed in four years. Within this curriculum there are two emphases—vocal/choral music, and instrumental music.

Professional educational requirements

DED 102
EDCEP 315, 525
EDCIP 410, 455
EDETC 318
EDSEC 376, 477, 582
EDSP 323

For the College of Education certification, the following GPA requirements exist:

Overall GPA

Full admission: 2.5 is required in all college work attempted, including transfer and K-State credits.

A 2.75 grade point average is required on a 35-hour general education core which is specified by each department. Students should consult with their advisors or inquire in 13 Bluemont Hall for specific requirements.

Music requirements for all options

Comprehensive musicianship:

MUSIC 200, 201, 202, 213, 218, 398, 406, 407, 417, and 473

Music education:

MUSIC 511, 512, and 670

Performance:

MUSIC 060, 501 or 502, and study of the major instrument or voice and enrollment in a major choral or instrumental organization each semester except the professional semester. In addition, at least one semester in a small ensemble is required.

A half recital or an extended "jury" recital is required before graduation. Divisional recommendation determines the methods of satisfying this requirements.

Instrumental majors are required to participate in marching band for at least two semesters (preferably during the freshman and sophomore years).

Piano proficiency requirements must be met one semester before scheduling student teaching.

Additional music requirements for instrumental emphasis

Performance:

MUSIC 203, 204, 206, 207, and 9 semester hours chosen according to the major instrument from: MUSIC 232, 233, 234, 235, 427, 428, and 429

Enrollments in major organizations must include at least two semesters in a choral organization; upon the recommendation of the advisor, one additional semester of individual or class instruction in voice may be substituted.

Additional requirements for vocal/choral emphasis

Performance:
If voice is the major performance area, MUSIC 232, 233, 234, 235, 285, and 287 or 465; 4 hours of keyboard. If keyboard is the major performance area, MUSIC 203, 204, 232, 233, 234, 235, 350 (two semesters), 410, and 450

Enrollments in major organizations must include at least two semesters in an instrumental organization; upon the recommendation of the advisor, one semester of advanced instrumental techniques classes may be substituted.

Requirements in general education are stated earlier in the College of Arts and Sciences section.

General regulations for all performance areas

As a part of performance requirements, studio and divisional seminars and general student recitals are held regularly. Each student is required to perform at least once a semester either in a studio seminar or in a student recital. All private study for credit will culminate in a jury exam each term.

Each division faculty maintains the right to advise students to discontinue performance study in that particular curriculum if the students have not demonstrated the necessary degree of progress.

For specific divisional requirements, each student should request a copy of detailed policies.

Participation in a major ensemble in the student's major performance area selected with the advice of a departmental advisor is required each semester. Piano and organ majors may elect either instrumental or choral major ensembles to satisfy requirements.

As an extension of the study of an instrument or voice, attendance at studio and division seminars is required each semester.

Attendance at a minimum of 15 recitals and concerts is required for seven semesters. This attendance is to be divided among the various performance areas.

Piano is required as a performance minor for all degrees unless piano is the performance major. If the performance major is piano, then voice, any instrument, or organ may substitute for the performance minor.

Required recital attendance

Attendance at a minimum of 15 recitals or concerts per semester for seven semesters is required for graduation. Transfer students' records will be evaluated.

Proficiencies

Music majors will enroll in MUSIC 218 Aural Proficiency concurrently with MUSIC 202. Credit for MUSIC 218 is earned by passing the aural proficiency exam. Successful completion of MUSIC 218 is a prerequisite for enrollment in MUSIC 398, MUSIC 406, MUSIC 407, MUSIC 473 and MUSIC 474. (Exception for placement of transfer students.)

MUSIC 060 Piano Proficiency requirements must be met prior to graduation.

Fees for private music lessons

University students enrolled in the bachelor of music, bachelor music education, bachelor of arts in music degrees or who are minoring in music, are exempt from fees for private music lessons and music practice facilities.

Students not majoring or minoring in one of these music curricula may take private music instruction (pending availability of staff and facilities) by paying fees as listed in the Fees section of this catalog.

Comprehensive musicianship courses

The musical styles courses are required of all undergraduate music majors and coordinate the many facets of the student's musical training. The structure of this program removes the traditional division between history and theory and integrates the student's study by stylistic periods, prefaced by a concentrated introduction to musical textures and basic technical skills. Included in each course are lectures in theory and history as well as laboratory work in performance, conducting, keyboard application, aural skills, analysis, and creative writing.

Styles courses are governed by the philosophy that all musicians need practical skills in performance, composition, and analysis; music students should recognize a coherent link between all facets of musical training (including those requirements outside the styles courses); and all musical studies should, as closely as possible, relate to one's own time.

MUSIC 200. Styles I, Elements of Music. (3) I, II. The musical language and its relationship between mind and ear. Formation of interval, scale, and chord patterns; basic notational procedures.

MUSIC 201. Styles II, Textures of Music. (4) I, II. An introduction to musical elements and historical practice with emphasis on texture as a uniting force; stylistic procedures as applied to sound parameters by the major composers. Pr.: MUSIC 200 or tested knowledge of basic music theory.

MUSIC 202. Styles III, The Classical Period. (4) I, II. History and performance practices of the late eighteenth century. Diatonic chord structures and nonharmonic tones, introduction to modulation. Scoring for the piano; small forms. Pr.: MUSIC 201.

MUSIC 213. Styles IV, The Romantic Period. (4) I, II. Historical survey of the nineteenth century. Chromatic harmony, modulations, score reading, and large homophonic forms. Composition for piano with voice or solo instrument. Pr.: MUSIC 202.

MUSIC 218. Aural Skills Proficiency. (0) I, II. Required for graduation of all music majors. Pr.: MUSIC 202 or conc. enrollment.

MUSIC 398. Musical Styles of the Baroque Period. (4) II. Historical survey from 1600 to 1750; counterpoint with emphasis on invention, canon, and fugue; scoring for strings. Pr.: MUSIC 213 and MUSIC 218.

MUSIC 406. Musical Styles to 1600 (Medieval and Renaissance). (4) I. Historical survey, modal counterpoint, early notational systems, performance practice, improvisational frameworks, development of instruments and forms. Pr.: MUSIC 213 and MUSIC 218.

MUSIC 407. Musical Style of the Twentieth Century. (4) I. Modern music; contemporary practice and aesthetics; polytonality, serial techniques, electronic music. Pr.: MUSIC 218 and MUSIC 398.

MUSIC 473. Seminar in Comprehensive Musicianship. (2) II, S. A study of music technology and computer applications; popular and non-Western styles. Pr.: MUSIC 213 and MUSIC 218. Required for music education and performance majors.

MUSIC 474. Problems in Musical Style and Music Pedagogy. (2) I, II, S. Individual projects relating to a specific style or pedagogical problem of the performance major or minor. Pr.: MUSIC 213 and MUSIC 218.

MUSIC 599. Special Studies in Music. (1–3) I, II, S. Pr.: Background of courses needed for studies undertaken.

Music history, literature, and theory courses

◆**MUSIC 100. Music Fundamentals.** (3) I, II, S. Elementary instruction in the theory of music. Limited to nonmusic majors.

◆**MUSIC 160. Music Listening Laboratory.** (2) I, II, S. A basic introduction to music. Overview of Medieval, Renaissance, Baroque, Classic, Romantic, and Twentieth Century stylistic periods; elements of music (melody, rhythm, harmony, form, timbre); and instrument recognition. The focus of the class is on developing listening skills and learning to write brief papers using the new language that has been acquired. Performances are provided by university ensembles, faculty artists, and special guests. Limited to nonmusic majors.

MUSIC 220. Topics in Music. (1–3) Offered on demand. Exploration of the musical dimensions of a particular topic or theme. Topics vary. May be repeated once.

◆**MUSIC 245. Introduction to American Music.** (3) I, II, S. An introduction to the functions of music in American society and the elements of music, including a survey of the development of various types and styles of music in America. For nonmusic majors only.

◆**MUSIC 250. Introduction to Music.** (3) I, II, S. Elements of music as represented in selected masterpieces of the standard concert repertory, designed to heighten the perception and the enjoyment of the listener who has limited musical knowledge. For nonmusic majors only.

◆**MUSIC 310. History of Musical Instruments.** (2) Offered on demand, only in intersessions, through TELENET, or off-campus. The development of musical instruments in each period of Western music. Pr.: MUSIC 160 or 250.

MUSIC 385. History of the American Popular Song. (2) Offered on sufficient demand. The vigor and musical inventiveness of this unique American art form including the melodic, rhythmic, and harmonic aspects of the songs of Jerome Kern, Irving Berlin, George Gershwin, and others. Pr.: MUSIC 160 or MUSIC 250.

MUSIC 390. Special Studies in Music. (1–3) I, II, S. Pr.: Background of courses needed for studies undertaken.

◆**MUSIC 399. Honors Seminar.** (3) On sufficient demand. For selected sophomores.

◆**MUSIC 420. History of Jazz.** (3) On sufficient demand. Survey of jazz styles and personalities. For music majors and nonmajors. Pr.: MUSIC 160, 250, or equiv.

◆**MUSIC 424. Jazz in Kansas City and the Southwest.** (2–3) Offered on demand, only in intersessions, through TELENET, or off-campus. The history and development of jazz styles in Kansas City and the southwestern United States, emphasizing the influence on styles of other geographic areas. Pr.: MUSIC 160.

MUSIC 425. Topics in Jazz. (Var.) Offered on sufficient demand. Big bands; jazz pianists and styles; survey of combo jazz styles, etc. Pr.: MUSIC 160.

MUSIC 470. Songwriting. (3) Offered on sufficient demand. Composition of original small song forms including preparation of lead sheet and vocal score using guitar chord symbols. Pr.: MUSIC 100. For nonmusic majors only.

MUSIC 498. Honors Tutorial in Music. (1–3) I, II. Individual directed research and study of a topic in music, normally as a preliminary to writing a senior honors thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the honors program of the College of Arts and Sciences, and permission of the instructor.

MUSIC 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

MUSIC 570. Musical Comedy. (3) On sufficient demand. The history of operetta and music comedy from Offenbach to the present. Offered jointly by Departments of Music and Speech. Same as THTRE 570.

MUSIC 601. Western Music before 1750. (2–3) II, alternate S. A survey of the development of Western music from early Greek civilization to 1750. Pr.: MUSIC 398 and 406.

MUSIC 614. Harmony and Tonal Counterpoint. (1) Recommended for graduate students in music who desire additional work in the harmonic aspects of 18th-century counterpoint. Concurrent enrollment in MUSIC 615 required.

MUSIC 615. Canon and Fugue. (2) I, S. Counterpoint in eighteenth century style. Pr.: MUSIC 398, consent of instructor.

MUSIC 616. Twentieth-Century Counterpoint. (2) II, S. Contrapuntal devices used by twentieth-century composers; serial techniques. Pr.: MUSIC 398, consent of instructor.

MUSIC 620. Music Calligraphy and Score Preparation. (2) Tools and procedures for professional preparation of music manuscript in facsimile editions. Computer applications for typesetting and music publishing. Pr.: MUSIC 201.

MUSIC 631. Technology of the Electronic Music Studio. (2) I, S. Instrumentation and systematic procedures as applied to the construction of electronic music. Principles of voltage-controlled systems, synchronous tape machines, and audio mixing. Individual and team projects. Pr.: MUSIC 521, consent of instructor.

MUSIC 632. Digital Sound Synthesis. (2) On sufficient demand. Exploration of real-time interactive systems. Theory and application pertaining to the creation of instruments and scores using additive and FM techniques. Team projects. Pr.: MUSIC 631.

MUSIC 650. History of the Opera. (3) On sufficient demand. A study of selected masterpieces of musical drama, with emphasis on the relationship of music and drama, and on the unique qualities of opera as a collective artwork. Pr.: MUSIC 201 or 250. Same as THTRE 671.

MUSIC 702. Style Analysis. (2–3) On sufficient demand. Training in a comprehensive, systematic analytical approach to all style periods, and in verbalizing analytical perceptions. Pr.: MUSIC 407.

MUSIC 704. Symphonic Literature. (3) II. The development of orchestral music from the late Baroque to the present, with emphasis on selected symphonies of the late eighteenth and nineteenth centuries. Pr.: MUSIC 407.

MUSIC 705. Chamber Music Literature. (3) II, in alternate years. A selected survey of masterpieces of small ensemble music from 1750 to the present. Special emphasis on the string quartet. Pr.: MUSIC 407.

MUSIC 706. Song Literature. (3) II, in alternate years. Survey, by historical period and national style, of major solo vocal works. Pr.: MUSIC 407.

MUSIC 708. Choral Literature. (3) II, in alternate years. A study of standard choral masterpieces in both large and small forms from 1450 to the present. Pr.: MUSIC 407.

MUSIC 711. Practical Composition and Arranging. (2) On sufficient demand. Explanation of styles and techniques applicable to contemporary commercial music. Practical arranging for the stage band. Pr.: MUSIC 213 or consent of instructor.

MUSIC 714. Advanced Orchestration. (2) On sufficient demand. The study of orchestra and band scores. Exercises in orchestrating this type of music for different choirs of instruments, as well as scoring for full orchestra and symphonic band. Pr.: MUSIC 407 or consent of instructor.

MUSIC 737. Organ Literature. (3) I, in alternate years. A survey of significant compositions from the Renaissance to the present, with emphasis on performance practice. Pr.: MUSIC 407.

MUSIC 738. Piano Literature. (3) I, in alternate years. Selective survey of music for piano from 1750 to the present. Pr.: MUSIC 407.

MUSIC 740. Studies in Music Literature. (3) On sufficient demand. Study of the repertory of a selected musical genre or medium of performance. Pr.: MUSIC 407.

MUSIC 766. Seminar in the Life and Works of an Individual Composer. (3) I. Study of the career and achievements of a selected composer of major stature. Pr.: MUSIC 407.

MUSIC 767. Topics in American Music. (3) On sufficient demand. Studies of the various genres of American music. Pr.: MUSIC 407.

MUSIC 799. Problems in Music. (Var.) I, II, S. Individual guided work in a selected area. Pr.: Six hours graduate credit in music.

Music education courses

MUSIC 232. Woodwind Techniques and Materials. (1) I. A beginning course in the fundamentals of playing and methods for teaching woodwind instruments. For music majors only, and not open to woodwind majors.

MUSIC 233. Brass Techniques and Materials. (1) II. A beginning course in the fundamentals of playing and methods for teaching brass instruments. For music majors only, and not open to brass majors.

MUSIC 234. String Techniques and Materials. (1) I. A beginning course in the fundamentals of playing and methods for teaching stringed instruments. For music majors only, and not open to string majors.

MUSIC 235. Percussion Techniques and Materials. (1) II. The fundamentals of playing and methods of teaching percussion instruments. For music majors only, and not open to percussion majors.

MUSIC 405. Music for Elementary Teachers. (3) I, II, S. The contribution of music to child development in elementary schools. A study of music literature suited to children through the development of purposive listening and the expressive phases of music including rhythmic response, singing, playing, reading, and writing. Pr.: Junior standing or consent of instructor.

MUSIC 427. Advanced String Techniques and Materials. (1–2) II. Playing and teaching skills beyond fundamentals and presentation of materials suitable for private and public school instruction at the secondary level. Required of all instrumental majors in music education. Pr.: MUSIC 234.

MUSIC 428. Advanced Woodwind Techniques and Materials. (1–2) II. Playing and teaching skills beyond fundamentals and presentation of materials suitable for private and public school instruction at the secondary level. Required of all instrumental majors in music education. Pr.: MUSIC 232.

MUSIC 429. Advanced Brass Techniques and Materials. (1–2) I. Playing and teaching skills beyond fundamentals and presentation of materials suitable for private and public school instruction at the secondary level. Required of all instrumental majors in music education. Pr.: MUSIC 233.

MUSIC 511. Music in the Schools, K–6. (4) II. The music curriculum in grades K–6, including a study of the musical characteristics of children and materials and techniques for teaching instrumental, vocal, and general music at this level. Pr.: Admission to teacher education and junior standing in music.

MUSIC 512. Music Program in Junior/Senior High Schools. (4) I. Organization and administration of the comprehensive music program in junior and senior high schools; including the study of vocal and instrumental ensemble development, as well as techniques and materials for other types of music classes. Pr.: Admission to teacher education and junior standing in music.

MUSIC 670. Advanced Studies in Music Education. (2) I, II, S. Advanced undergraduate studies of various topics related to the teaching of music in grades K–12. May be repeated for credit when topics vary. Pr.: MUSIC 511 or 512.

Workshops in music

MUSIC 489. Workshop in Music. (1–2) S. Specialized interest areas for undergraduate students only. Pr.: Consent of instructor.

Organizations and ensembles

MUSIC 111. Concert Choir. (0–1) I, II. Admission by audition.

MUSIC 113. University Band. (0–1) II. Open to all interested wind and percussion performers without audition.

MUSIC 114. Pep Band. (0–1) II. Admission by audition.

MUSIC 115. Marching Band. (0–1) I. Admission by audition.

MUSIC 116. Concert Band. (0–1) II. Open to all interested wind and percussion performers without audition.

MUSIC 117. Symphony Band. (0–1) I, II, S. Admission by audition.

MUSIC 120. Chamber Singers. (0–1) I, II, S. Admission by audition.

MUSIC 121. Collegiate Chorale. (0–1) I, II, S. Open to all interested singers. Audition determines membership in other choral organizations.

MUSIC 125. K-State Singers. (0–1) I, II. Admission by audition. (Not open to music majors.)

MUSIC 130. Symphony Orchestra. (0–1) I, II, S. Admission by audition.

MUSIC 131. Theatre Orchestra. (0–1) I, II. Admission by audition.

MUSIC 135. Men's Glee Club. (0–1) I, II. Admission by audition.

MUSIC 140. Women's Glee Club. (0–1) I, II. Admission by audition.

MUSIC 280. Lower-Division Ensemble Performance. (1) I, II, S. Instruction is offered each semester in the following areas: brass, chamber music, concert jazz, jazz combo, strings, winds, percussion, and vocal ensemble. Admission is by audition and students may enroll in more than one ensemble simultaneously.

MUSIC 298. Jazz Improvisation I. (1) I, II. Fundamentals of jazz harmony with emphasis on simple chord progressions, blues scales, and some modes. Performance of improvised solos based on "standards" and original. May be repeated once for credit. Pr.: Consent of instructor.

MUSIC 299. Jazz Improvisation II. (1) I, II. Continuation of Jazz Improvisation I, with emphasis on more complex chord progressions, altered scales, and other modes. May be repeated once for credit. Pr.: MUSIC 298 or consent of instructor.

MUSIC 350. Studio Accompanying. (1) On sufficient demand. Piano student assigned to studio instructor. Accompanies lessons for at least two hours a week. Ensemble credit for pianists. Pr.: Consent of instructor.

MUSIC 351. Recital Accompanying. (1) On sufficient demand. Piano student assigned to a music major preparing for graduation recital. Pianist accompanies student in lessons and presents the formal public program as course requirement. Pr.: Consent of instructor.

MUSIC 400. Concert Choir. (0–1) I, II. Admission by audition.

MUSIC 401. Concert Band. (0–1) I, II, S. Open to all interested wind and percussion performers without audition.

MUSIC 402. Symphony Band. (0–1) I, II, S. Admission by audition.

MUSIC 403. Collegiate Chorale. (0–1) I, II, S. Open to all interested singers. Audition determines membership in other choral organizations.

MUSIC 404. Symphony Orchestra. (0–1) I, II, S. Admission by audition.

MUSIC 408. Men's Glee Club. (0–1) I, II. Admission by audition.

MUSIC 409. Women's Glee Club. (0–1) I, II. Admission by audition.

MUSIC 411. Marching Band. (0–1) I. Admission by audition.

MUSIC 414. Theatre Orchestra. (0–1) I, II. Admission by audition.

MUSIC 415. Chamber Singers. (0–1) I, II, S. Admission by audition.

MUSIC 416. Pep Band. (0–1) II. Admission by audition.

MUSIC 475. Opera Workshop. (Var.) I, II, S. Principles and techniques of operatic and musical theatre production, with emphasis on class rehearsal and performance of selected scenes from opera and musical drama; brief survey of the history of opera. Offered jointly by the Departments of Music and Speech. Vocal ensemble credit may be earned in this course. Same as SPCH 475.

MUSIC 480. Upper-Division Ensemble Performance. (1) I, II, S. Instruction is offered each semester in the following areas: brass, chamber music, concert jazz, jazz combo, strings, winds, percussion, and vocal ensemble. Admission is by audition and students may enroll in more than one ensemble simultaneously.

MUSIC 490. Collegium Musicum. (1) I, II, S. An ensemble devoted primarily to the performance of music written before 1700. Authentic instruments used when possible. Pr.: Consent of instructor.

Performance classes

MUSIC 050. Recital Attendance. (0) I, II.

MUSIC 060. Piano Proficiency. (0) I, II, S. Required for graduation of all music majors.

MUSIC 103. Voice Class I. (1) I, II. A beginning course in the basics of singing for nonmusic majors.

MUSIC 104. Voice Class II. (1) I, II. Singing technique skills beyond the basics to include performance skills for nonmusic majors. Pr.: MUSIC 103.

MUSIC 203. Vocal Techniques I. (1) I, II. A beginning course in the basics of singing and teaching skills. For music education majors whose emphasis is instrumental music.

MUSIC 204. Vocal Techniques II. (1) I, II. Singing and teaching skills beyond the basics and presentation of materials suitable for private and public school instruction at the secondary level. For music education majors whose emphasis is instrumental music. Pr.: MUSIC 203.

MUSIC 206. Piano Class I. (1) I, II, S. For freshmen and transfer music students with no piano background. Sections also available for nonmusic majors and nondegree students.

MUSIC 207. Piano Class II. (1) I, II, S. For freshmen and transfer students with some piano background, as well as those who have failed some or all of the Piano Proficiency Exam.

MUSIC 208. Guitar Class I. (1) I, II. Beginning-level group instruction in guitar performance.

MUSIC 209. Guitar Class II. (1) I, II. Intermediate-level instruction in guitar performance.

MUSIC 260. Beginning Recorder Playing. (2) Offered on demand, only in intersessions. Learning to play the recorder; for those without previous recorder playing background. Pr.: MUSIC 100 or consent of instructor.

MUSIC 285. Italian Diction. (1) I. Rules for pronouncing and translating Italian vocal texts.

MUSIC 287. German Diction. (1) I. Rules for pronouncing and translating German vocal texts.

MUSIC 391. Keyboard Pedagogy. (2) II. A systematic study of pedagogy which examines effective teaching methods and aids in the development of a philosophy of professional teaching. Pr.: Keyboard majors with conc. enrollment in MUSIC 455.

MUSIC 410. Vocal Techniques III. (1) I. Improved singing technique with an emphasis on pedagogy and Italian diction. For music education majors whose emphasis is piano or organ. Pr.: MUSIC 203.

MUSIC 417. Conducting. (2) I. Techniques of the baton; gestures, signs, and cues as generally used in conducting choral and instrumental organizations. Includes essentials of technique and interpretation in both choral and instrumental types of ensemble performance. For music majors only. Required before admission to student teaching. Pr.: MUSIC 406.

MUSIC 450. Vocal Techniques IV. (1) I. More advanced singing skills. Practicum in teaching private singing lessons. For music education majors whose emphasis is piano or organ. Pr.: MUSIC 410.

MUSIC 465. French Diction I. (1) I. Rules for pronouncing and translating French vocal texts.

MUSIC 467. French Diction II. (1) II. Rules for pronouncing and translating French vocal texts.

MUSIC 492. Methods and Materials for the Studio. (2) I, II, S. Methods of teaching fundamental techniques; selection of teaching materials outlining courses of study. For undergraduate students in performance curricula. Taught in divisions according to the major. Practical application through supervised studio teaching. Pr.: MUSIC 391, or consent.

MUSIC 501. Half Recital. (0) I, II, S. Public performance; vocal or instrumental with suggested performing time of 25 minutes.

MUSIC 502. Full Recital. (0) I, II, S. Public performance; vocal or instrumental with suggested performing time of 50 minutes.

Studio performance

MUSIC 251. Pre-Performance Study. (Var.) I, II, S. For students who do not meet standards for regular performance study.

MUSIC 255. Lower-Division Performance. (Var.) I, II, S. Instruction is offered every semester in voice and each of the following instruments: baritone, bassoon, clarinet, double bass, early winds, flute, french horn, guitar, harp, harpsichord, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, viola da gamba, violin, and violoncello. Students may enroll in more than one instrument simultaneously and may earn 1 to 4 hours per semester in each instrument.

MUSIC 455. Upper-Division Performance. (Var.) I, II, S. Instruction is offered every semester in voice and each of the following instruments: baritone, bassoon, clarinet, double bass, early winds, flute, french horn, guitar, harp, harpsichord, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, viola da gamba, violin, and violoncello. Students may enroll in more than one instrument simultaneously and may earn 1 to 4 hours per semester in each instrument.

MUSIC 521. Composition. (Var.) I, II, S.

MUSIC 641. Secondary Performance Area. (1–2) For graduate students who wish to study an instrument (or voice) other than the major performance area. Pedagogical methods and fundamentals are stressed.

Philosophy

James R. Hamilton, Head

Professor Reagan;*Associate Professors Exdell* and Hamilton;* Assistant Professors Clark, Doyle, Draper,* Foran, Glymour, Pieper,* Rozemond, and Sabatés; Emeritus: Professors Miller,* Scheer, * and Tilghman.*

Philosophy is the study of the intellectual foundations of virtually every area of human thought and endeavor. Over the centuries philosophers have examined, for example, the nature and justification of moral values, religious and scientific explanations of the world, the rationality of social institutions, and the nature of reasoning and argument.

The program in philosophy gives students an understanding of traditional philosophical subjects such as these. It also helps students develop critical habits of thinking and skill in understanding complex issues. Consequently, philosophy is an appropriate subject around which to organize a general education for any purpose.

The Department of Philosophy offers a variety of options within the major program to provide flexibility in organizing a course of studies with philosophy at its center, and a minor.

Philosophy minor

PHILO 300	History of Ancient Philosophy
PHILO 301	History of Modern Philosophy

One course in logic:

PHILO 110	Introduction to Formal Logic
	or
PHILO 220	Symbolic Logic I

Any two philosophy courses 500 level or above.

There are five degree options: traditional philosophy, philosophy/pre-law, philosophy/pre-business, philosophy/pre-ministry, and philosophy/interdisciplinary.

Philosophy major

Core curriculum

All philosophy majors must take the philosophy core of five courses:

Two courses in the history of philosophy:

PHILO 300	History of Ancient Philosophy
PHILO 301	History of Modern Philosophy

One course in logic:

PHILO 110	Introduction to Formal Logic
	or
PHILO 220	Symbolic Logic I

And the following two courses:

PHILO 305	Philosophical Topics and Methods
PHILO 555	Ethical Theories

Students in the traditional philosophy option must take PHILO 220.

Traditional philosophy option

(B.A. only)

36 hours in philosophy

This option is for students who are interested in a traditional liberal arts course of study or who desire to do graduate study in philosophy.

Philosophy course requirements:	
Core curriculum	15
Philosophy courses numbered 400 and above	9
Philosophy courses numbered 600 and above	9
Philosophy elective	3
	36

Pre-law options

(B.A. or B.S.)

While no one major is given preference by law school admission committees, law schools recognize the value of philosophy for refining skills in expression, comprehension, and critical thinking. According to the *Pre-Law Handbook,* "the free and spirited consideration of philosophical questions is almost the model for legal training."

The Department of Philosophy offers two degree options for students planning to study law: a double-major option, intended as a complement to a second major in another department, and a single-major option, which does not require a second major.

Double-major option
27 hours in philosophy plus second major

Philosophy course requirements:

Core curriculum		15
PHILO 525	Social/Political Philosophy	3
PHILO 535	Philosophy of Law	3
One applied ethics course (PHILO 365, 385, 390, 492, 575, 595)		3
Philosophy course numbered 400 and above		3
		27

Additional requirements:
Completion of another major in a department in the College of Arts and Sciences.

Single-major option
36 hours in philosophy

Philosophy course requirements:

Core curriculum		15
PHILO 525	Social/Political Philosophy	3
PHILO 535	Philosophy of Law	3
One applied ethics course (PHILO 365, 385, 390, 492, 575, 595)		3
Philosophy courses numbered 600 and above		9
Philosophy elective		3
		36

Philosophy/pre-business

The pre-business option is for students who plan to do further work in a college of business leading to a master's in business administration. For requirements for admission to the M.B.A. program at K-State, see the College of Business Administration section of this catalog.

Philosophy course requirements:

Core curriculum		15
PHILO 525	Social/Political Philosophy **or**	3
PHILO 535	Philosophy of Law	
PHILO 545	Philosophy of Economics	3
Philosophy course numbered at least 400		6
		27

Students may combine a philosophy/pre-business degree with an undergraduate degree in the College of Business Administration. Under university requirements, a student must complete a total of at least 150 hours in order to receive dual degrees.

Philosophy/pre-ministry

(B.A. only)

This is a nonsectarian program for students who are interested in the religious ministry as a profession. Students in this program will be advised on other courses outside philosophy recommended by most American schools of theology.

Philosophy course requirements:

Core curriculum		15
PHILO 515	Philosophy of Religion	3
PHILO 635	Metaphysics	3
Philosophy courses numbered 400 and above		9
		30

Other requirements:
Three courses in other disciplines, as approved by the department, in which religion is studied.

Interdisciplinary option

(B.A. or B.S.)

30 hours in philosophy plus second major

This option is for students who wish to combine a major in philosophy with a major in another discipline. Each student completing a degree under this option must have a faculty advisor in the Department of Philosophy who supervises the student's program. Philosophy courses other than the core curriculum must be approved by this advisor. Students must complete an independent study course (PHILO 680 Problems in Philosophy) focusing on the relationship of philosophy to the student's other major and write a substantial research paper.

Philosophy course requirements:

Core curriculum		15
PHILO 680	Problems in Philosophy	3
Philosophy courses numbered 400 and above		12
		30

Additional requirements: Completion of a second major, as appropriate; student's program must be approved by a faculty advisor in the Department of Philosophy.

Philosophy courses

PHILO 100. Introduction to Philosophical Problems. (3) I, II, S. An introduction to some of the main problems of philosophy, such as the nature of morality, knowledge, mind and body, political authority, and the existence of God.

PHILO 105. Introduction to Critical Thinking. (3) I, II. An introduction to the values of the Western intellectual tradition. Emphasizes the concepts of truth and reasoning and their application to science, ethics, and everyday life. Open only to freshmen and sophomores.

PHILO 110. Introduction to Formal Logic. (3) I, II, S. An elementary investigation of the concept of arguments introducing the basic symbolic techniques of contemporary logic. The presentation is at a more elementary level than that of Symbolic Logic I.

PHILO 115. Introduction to Philosophy of Religion. (3) I, II. Raises the philosophical problems of the meaning of religious language, the existence and nature of God, the distinction between reason and faith, between knowledge and belief, and between revelation and science.

PHILO 120. Introduction to the Philosophy of Art and Literature. (3) I, II. An introduction to philosophical problems concerning the concept of art, aesthetic value, and art appreciation and criticism. For students of art, architecture, literature, music, and theater.

◆PHILO 125. Introduction to Philosophy of Science. (3) I, II, S. Examines the nature of science and how it differs from pseudo-sciences such as astrology, and raises questions about the nature of reality and social value of science.

PHILO 130. Introduction to Ethics. (3) I, II, S. Examines philosophical issues arising in and about morality. Topics may include the nature of moral judgments, moral knowledge, moral justification, and the relation of morality to religion. Topics may be approached by a study of contemporary moral problems, by reading of classical philosophical texts, or by both methods.

◆PHILO 135. Introduction to Social and Political Philosophy. (3) I, II, S. Examines the concepts of justice, the ideal society, and the relation between the state and the individual. Classical and contemporary views on civil disobedience, the enforcement of morals, punishment, and the relation between politics and economics are discussed.

◆PHILO 140. Introduction to Philosophy of Mind. (3) I, II. Examines problems about the relation between mind and body, the existence of a "soul," the concepts of "insanity" and "the unconscious," parapsychology, and major schools of modern psychology such as behaviorism, Freudianism, and existentialist psychiatry.

◆PHILO 145. Introduction to Philosophical Classics. (3) I, II. An introduction to philosophy through the careful reading of selected works of a major influence in the history of philosophy.

PHILO 150. Introduction to the Philosophy of Feminism. (3) I, II. Philosophical issues pertaining to sexual equality, masculinity, femininity, and parenting, as well as contemporary topics such as pornography, prostitution, sexual harassment, and rape.

PHILO 175. Philosophical Composition. (4) II. The purpose of this course is to provide students an introduction to philosophy while assisting them to further develop writing skills in preparation for Expository Writing II. Topics covered vary, but typically are related to understanding ourselves and our moral practices. Pr.: English 100 and open only to freshmen and sophomores.

PHILO 215. Honors Introduction to Philosophy. (3) I, II. An introduction to the main problems in philosophy. For students in the honors program.

PHILO 220. Symbolic Logic I. (3) I, II. A systematic introduction to modern logic. Truth-functions, truth tables, and calculus of propositions, classes and relations.

◆PHILO 297. Honors Introduction to the Humanities I. (3) I. Study of selected major works of history, literature, and philosophy which have been of central importance in the Western cultural tradition. Considerable emphasis is placed on classroom discussion and writing interpretive essays. Limited to entering freshman students. Pr.: Consent of instructor. Same as ENGL 297, HIST 297, MLANG 297.

◆PHILO 298. Honors Introduction to the Humanities II. (3) II. Continuation of PHILO 297. Pr.: PHILO 297 or consent of instructor. Same as ENGL 298, HIST 298, MLANG 298.

PHILO 300. History of Ancient Philosophy. (3) I. The development of philosophical ideas in the West through the medieval period, with special emphasis on ancient Greek philosophy.

PHILO 301. History of Modern Philosophy. (3) II. The development of philosophical ideas from the Renaissance to the nineteenth century.

PHILO 305. Philosophical Topics and Methods. I, II. This course is intended to provide philosophy majors, relatively early in their course of studies, with the special knowledge and skills needed to do philosophical research. It will acquaint students with library resources, the mechanics of paper writing, the major branches of philosophy, important philosophical vocabulary, the techniques of close reading, and techniques of argument. Pr.: One course in philosophy.

PHILO 365. Medical Ethics. (3) I, II. A detailed examination of selected moral issues which confront the medical professional and of the main points of the Hippocratic Oath. Topics frequently dealt with include: experimentation on human subjects, informed consent, abortion, euthanasia, conflict of interest, confidentiality of patients' records and conversations.

PHILO 385. Engineering Ethics. (3) I or II. An examination of the principles of ethics as applied to cases arising in the practice of the various branches of engineering.

PHILO 390. Business Ethics. (3) I or II. An examination of the principles of ethics as applied to situations and practices in modern American business.

PHILO 397. Experimental Studies in Philosophy. (1–6) I, II. Experimental and interdisciplinary studies in philosophy. Topics selected in consultation with instructor. Pr.: Permission of instructor.

◆PHILO 399. Honors Seminar in Philosophy. (3) I, 1979.

PHILO 492. Computers and Society. (1–2) II. A study of ethical issues raised by the impact of computers and associated technologies on society, including such topics as ethics of computer use, computer fraud, protection of privacy; legal, moral, and public policy-making responsibilities of computer professionals. Pr.: Junior standing plus conc. enrollment in CIS 492; CIS 520.

PHILO 499. Senior Honors Thesis. (2) I, II, S. Open only to students in the arts and sciences honors program.

PHILO 510. Symbolic Logic II. (3) On sufficient demand. An advanced study of logical systems and problems in logical theory. Pr.: PHILO 220 or 110.

PHILO 515. Philosophy of Religion. (3) II, in alternate years. A course designed to examine philosophically the basic concepts of religion, e.g., truth and faith, God and atheism, reason and revelation, morality and religion, evil, man, sin, salvation, eschatology. Pr.: One course in philosophy or consent of instructor.

PHILO 525. Social-Political Philosophy. (3) I or II. A combined systematic and historical examination of social and political philosophy from antiquity to the present. Pr.: One course in philosophy or consent of instructor.

PHILO 535. Philosophy of Law. (3) I or II. A study of problems about the nature of legal reasoning, relationship between law and morality, and the justification of legal punishment. Pr.: One course in philosophy or consent of instructor.

PHILO 545. Philosophy of Economics. (3) I, II. An examination of the moral and conceptual foundations of modern economic systems. Considers such topics as the relations between "economics rationality" and the quality of life, the just distribution of wealth, the nature of property rights, and the value of technology in society. Pr.: One course in philosophy or consent of instructor.

PHILO 550. Philosophy of Social Sciences. (3) I or II. In alternate years. An examination of the possibility of a science of human beings and of specific issues in the social sciences such as models and measurements, reduction, functional analysis, ideal types, and axiomatization. For students in sociology, anthropology, political science, psychology, geography,and history. Pr.: One course in philosophy or consent of instructor.

PHILO 555. Ethical Theories. (3) I. A systematic survey of the major literature of moral philosophy, e.g., Plato, Aristotle, Hobbes, Hume, Kant, Mill, Moore, Prichard. Pr.: One course in philosophy or consent of instructor.

PHILO 560. Philosophy of Feminism. (3) I or II. An indepth analysis of important recent feminist contributions to social and political philosophy, epistemology, aesthetics, and ethics. Topics such as power, work, love, reproductive freedom, and education will be considered. Pr.: One course in philosophy or consent of instructor.

PHILO 570. Aesthetics. (3) On sufficient demand. A study of selected topics in aesthetics and the philosophy of art. Pr.: One course in philosophy or consent of instructor.

PHILO 575. Philosophy in Literature. (3) I or II. An examination of philosophical ideas encountered in selected writings of the world's great poets, novelists, essayists. Pr.: One course in philosophy and one in literature or consent of instructor.

PHILO 580. Existentialism. (3) I or II. A study of prominent thinkers in the existentialist tradition. Pr.: One course in philosophy or permission of instructor.

PHILO 595. Environmental Ethics. (3) II. This course explores humanity's ethical responsibilities to the natural world and examines the philosophical principles underlying controversies over the proper balance between development and wilderness, and the cultural and the natural. Pr.: One course in philosophy or consent of instructor.

PHILO 600. Studies in Ancient Philosophy. (3) I. A detailed study of a selected philosopher or movement in the history of Greek and Roman philosophy. Pr.: PHILO 300 or consent of instructor.

PHILO 605. Studies in Seventeenth and Eighteenth Century Philosophy. (3) II. A detailed study of a selected philosopher, school, or problem drawn from the history of philosophy in the seventeenth and eighteenth centuries. Pr.: PHILO 301 or consent of instructor.

PHILO 610. Recent European Philosophy. (3) I or II. An examination of important issues and movements in twentieth century European philosophy. Emphasis upon existentialism and phenomenology. Pr.: Two courses in philosophy.

PHILO 620. The Development of Analytical Philosophy. (3) I or II. The history of analytical philosophy in the first four decades of the twentieth century. A study of the work of Moore, Russell, the early Wittgenstein, and the logical positivists. Pr.: One course in philosophy.

PHILO 625. The Philosophy of Language. (3) I or II, in alternate years. Philosophical problems concerning the nature of language and such concepts as meaning and truth. Pr.: PHILO 110 or 220.

PHILO 630. Recent British-American Philosophy. (3) I or II. On demand. A detailed study of selected philosophical writings of current interest in Great Britain and the United States. Pr.: Two courses in philosophy.

PHILO 635. Metaphysics. (3) I or II, in alternate years. A critical examination of theories about things and their qualities, causality, space, and time. Both traditional and contemporary sources may be used, but emphasis will be placed on the latter. Pr.: Two courses in philosophy.

PHILO 640. Epistemology. (3) I or II, in alternate years. An examination of philosophical problems about the nature of our knowledge of the world. Pr.: Two courses in philosophy.

PHILO 645. The Philosophy of Science. (3) I or II, in alternate years. Philosophical problems concerning science, its methods, laws, and theories. Pr.: Two courses in philosophy.

PHILO 655. The Philosophy of Mind. (3) I, in alternate years. The philosophy of psychology. An examination of philosophical problems about such psychological concepts as mind, consciousness, thinking, emotion, and dreaming. Pr.: Two courses in philosophy.

PHILO 660. Advanced Ethics. (3) I or II. Detailed examination of selected topics in contemporary ethical theory. Pr.: PHILO 555.

PHILO 680. Problems in Philosophy. (Var.) I, II, S. Independent study for qualified students. Pr.: Background of courses required for problem undertaken.

PHILO 701. Topics in Metalogic. (3) On sufficient demand. Selected topics in the analysis of first-order theories and the foundations of mathematics. Pr.: PHILO 510 or MATH 511.

Physics

James C. Legg,* Head

Professors Bhalla,* Cocke,* Folland,* Gray,* Hagmann,* Legg,* Lin,* Rahman,* Reay,* Richard,* Sorensen,* Stanton,* Weaver,* and Zollman;* Associate Professors Bolton,* Chakrabarti,* DePaola,* Jiang,* Law,* J. Lin,* O'Shea,* Stockli,* and Wysin;* Assistant Professors Naples* and Thumm;* Associate Research Professors Carnes and *Sidwell;* Emeriti: Professors Curnutte,* Dale,* Donoghue,* Dragsdorf,* Manney,* and Williams.*

Physics is a quantitative science based on observation and experiment. Students of physics learn, often by performing experiments themselves, how a body of experimental data suggests an experimental law. Then they see how this experimental law can be generalized and tested by further experiment. However, it is as the originator of the next step in the method of science that physics emerges as the foundation of our technological age. The collection of experimental laws is studied and when properly generalized and tested is unified into a fundamental physical principle.

A major in physics equips a liberal arts student with a broad education that is uniquely adapted to our time. The physics curriculum provides a broad science background suitable for the creative application of science and mathematics to interdisciplinary problems. Although physics does not exclude the intuitive mind, the emphasis on mathematics tends to favor more analytically talented individuals.

Students choosing to major in physics may earn either a bachelor or science (BS) or a bachelor of arts (BA) degree. The BS degree is recommended for students who are considering a career in a technical industry, in research, or in teaching at the post-secondary level. Students who are planning to attend graduate school should complete the BS degree in order to be properly prepared.

Physics majors seeking a BA complete the requirements for the College of Arts and Sciences in addition to the following courses:

Bachelor of arts

PHYS 122	Computation and Experimentation in Physics	3
PHYS 223	Physics I	5
PHYS 224	Physics II	5
PHYS 325	Physics III	4
PHYS 472	Mathematical Physics	3
PHYS 506	Physics Laboratory	3
PHYS 522	Mechanics	3
PHYS 532	Electricity and Magnetism	3
PHYS 562	Introduction to Quantum Mechanics	3
PHYS 564	Thermodynamics and Statistics Mechanics	3
MATH 220	Calculus I	4
MATH 221	Calculus II	4
MATH 222	Calculus III	4
MATH 240	Elementary Differential Equations	4

Physics majors seeking a BS must complete the requirements of the College of Arts and Sciences, the requirements for the BA degree in physics, plus the following courses

Bachelor of science in physics

PHYS 636	Basic Electronics for Physicists	4
PHYS 6xx	Advanced Physics, course elective*	3
PHYS 709	Applied Quantum Mechanics	3

*The advanced physics course electives must be chosen from the following courses:

PHYS 616	Advanced Physics Lab	3
PHYS 620	Teaching University Physics	3
PHYS 623	Oscillations, Waves, and Relativity	3
PHYS 639	Computation in Physics	3
PHYS 642	Nuclear Physics	3
PHYS 651	Optics and Lasers	3
PHYS 655	Physics of Solids	3
PHYS 691	Astrophysics	3
PHYS 562	Particle Physics	3

Chemistry 1 and 2 (CHM 210 and 230) are strongly recommended for all physics majors.

Bachelor of science in general physics

PHYS 122	Computation and Experimentation in Physics	3
PHYS 223	Physics I	5
PHYS 224	Physics II	5
PHYS 325	Physics III	4
PHYS 472	Mathematical Physics	3

PHYS 506	Physics Laboratory	3
PHYS 522	Mechanics	3
PHYS 532	Electricity and Magnetism	3
MATH 220	Calculus I	4
MATH 221	Calculus II	4
MATH 222	Calculus III	4
MATH 240	Elementary Differential Equations	4
PHYS 5xx or 6xx physics electives		6

Transfer students

The flexibility of the physics curriculum permits individual advisement, on the basis of studies completed, for students who transfer into the curriculum from other majors, community colleges, or other universities.

A five-year dual degree program in physics and mechanical engineering is available and similar dual degree programs can be arranged with physics and electrical engineering, nuclear engineering, or business administration. Interested students should inquire about these programs at the Department of Physics.

J. R. Macdonald Laboratory

K-State in cooperation with the U.S. Department of Energy, operates a major facility for the production and the acceleration of atomic ions. There are several accelerators, including a 6 MV tandem Van de Graaff, associated with this facility. The laboratory has recently built a superconducting LINAC booster accelerator which gives energies of over 100 MeV for some ions. A liquid He production plant has been installed to provide up to 500 watts of cryogenic cooling for the LINAC.

A new type of ion source called CRYEBIS has been developed and is producing high-charge, low-energy ions. At the present time it is the only ion source in the U.S. capable of producing bare argon ions. A network of work stations is available for the accumulation and analysis of data.

Physics courses

PHYS 017. Colloquium in Physics. (0) I, II. Weekly lectures on topics of current interest in physics by faculty and visiting scientists.

◆**PHYS 101. The Physical World I.** (3) I, II, S. The courses The Physical World I and II are designed to present an overview of the physical sciences for students who have little or no previous physical science. The Physical World I is principally physics and atomic theory. The observations and phenomena are simple and basic. Three hours lec. a week. Open only to freshmen, sophomores, and first-semester transfer students. Not available for credit to students who have credit in PHYS 106.

PHYS 102. The Physical World II. (3) I, II. Continuation of PHYS 101. The Physical World II presents an overview of astronomy, geology, chemistry, and molecular biology. Three hours lec. a week. Not open to seniors. Pr.: PHYS 101.

PHYS 103. The Physical World I Laboratory. (1) I, II, S. Two hours lab a week. Pr. or conc.: PHYS 101.

PHYS 104. The Physical World II Laboratory. (1) II. Two hours lab a week. Pr. or conc.: PHYS 102.

◆**PHYS 106. Concepts of Physics.** (4) I. An introductory course in physics which emphasizes the topics of physics normally presented to elementary school children. A qualitative approach with integrated laboratory, this course is recommended for students preparing for careers as elementary school teachers. Not available for credit to students who have completed PHYS 101.

PHYS 107. Physical Science Colloquium. (1–2) Offered by TELENET. Topics in physical science chosen to illustrate current research of scientists and methods used to study the physical universe. At each offering of this course a syllabus will be available giving the topics to be studied and the details of administration of the course. May be repeated once. Not open to physics majors.

PHYS 113. General Physics I. (4) I, II, S. A basic development of the principles of mechanics, heat, fluids, oscillations, waves, and sound. Emphasis is on conceptual development and numerical problem solving. Two hours lec., one hour rec., one hour quiz, and two hours lab a week. Pr.: MATH 150 or one and one-half units of high school algebra and one unit high school trigonometry.

PHYS 114. General Physics II. (4) I, II, S. The continued treatment of the fundamentals of electricity and magnetism, light and optics, atomic and nuclear physics. These concepts are used to understand D.C. and A.C. circuits, motors, and generators. Emphasis is placed on conceptual development and problem solving. Two hours lec., one hour rec., one hour quiz, and two hours lab a week. Pr.: PHYS 113.

PHYS 115. Descriptive Physics. (5) I, II. A one-semester course in physics covering mechanics, electricity, heat, light, sound, and atomic theory. It presents a survey of the major fields of physics with a concentration on how physicists work to understand and describe physical phenomena. Three hours lec., one hour quiz, one hour rec., and two hours lab a week. Pr.: High school algebra.

PHYS 122. Computation and Experimentation in Physics. (3) I. An introduction to the study of physics. Experiments on topics of contemporary interest in physics. Computers are used to acquire and analyze data and to create models of various phenomena. One hour lecture, one hour computer lab, and two hours experimental lab per week.

PHYS 191. Descriptive Astronomy. (3) I, II. A qualitative study of the sun and planets, stars and galaxies; a survey of what is known about the universe and how it is known.

PHYS 213. Engineering Physics I. (5) I, II. Mechanics and heat; for students of science and engineering. Two hours lec., two hours rec., one hour quiz, and two hours lab a week. Pr. or conc.: MATH 221.

PHYS 214. Engineering Physics II. (5) I, II. Sound, electricity, magnetism, light, and modern physics; for students of science and engineering. Two hours lec., two hours rec., one hour quiz, and two hours lab a week. Pr.: PHYS 213, MATH 221.

PHYS 223. Physics I, Mechanics and Thermodynamics. (5) II. For students of science and engineering. Lecture and quiz in common with PHYS 213. Special laboratory and recitation. Pr.: PHYS 122 or permission of lecturer, MATH 221 or conc.

PHYS 224. Physics II, Electromagnetism and Sound. (5) I. For students of science and engineering. Lecture and quiz in common with PHYS 214. Special laboratory and recitation. Pr.: PHYS 223 or permission of lecturer, MATH 221 or conc.

PHYS 300. Physics in Relation to Other Disciplines. (1–3) On sufficient demand. Variable content, offered only by prearrangement with the physics department and with the instructor. A brief syllabus will be available for each offering of PHYS 300 outlining the objectives and organization of the course for the semester in which offered. Pr.: Consent of instructor.

PHYS 325. Physics III, Relativity and Quantum Physics. (4) II. An introduction to modern physics as exemplified by atomic, nuclear, condensed matter, and particle phenomena. Three hours of lecture and one two-hour lab per week. Pr.: PHYS 122, 224 or 214; MATH 240 or conc. enrollment, and a working knowledge of spreadsheets and use of computers as data analysis tool.

◆**PHYS 399. Physics Honors Seminar.** (1–3) On sufficient demand. Discussions of topics of current interest in physics. Students must be enrolled in the arts and sciences honors program or have permission of the instructor.

PHYS 400. Independent Study in Physics. (1-3) I, II, S. Independent theoretical or experimental investigation of a topic for physics majors or for a senior honors thesis. May be repeated for credit up to a maximum of 6 hours. Pr.: Junior standing and consent of instructor.

PHYS 451. Principles of Contemporary Physics. (3) II. A nonmathematical introduction to twentieth century physics: relativity, quantum mechanics, the physics of solids, and fundamental particles. Not open to physics majors. Credit is not granted for both PHYS 451 and PHYS 452. Pr.: PHYS 101 or equiv.

PHYS 452. Contemporary Physics: Problems and Principles. (4) II. An introduction to twentieth century physics; relativity, quantum mechanics, the physics of solids, and fundamental particles. The lectures are in common with PHYS 451. Three hours lec. and one hour rec. each week. The recitation will consider the quantitative aspects of the subject matter. Not open to physics majors. Credit is not granted for both PHYS 451 and PHYS 452. Pr.: One year of college physics (PHYS 113 and 114 or equiv.), college algebra, and trigonometry.

PHYS 460. Undergraduate Topics in Physics. (1–6) Special topics in physics not completely treated in other courses. On sufficient demand. Pr.: PHYS 114 or equiv.

PHYS 472. Mathematical Physics. (3) An introduction to the application of mathematical methods to the study of physical systems. Topics include the use of ordinary differential equations in physics, the application of Fourier's methods to waves, vectors and matrices, applications of vector calculus, partial differential equations. Three hours of lecture per week. Pr.: PHYS 224, MATH 222 or conc. enrollment.

PHYS 495. Astronomy. (3) Topics in modern astronomy. Use of a telescope for observational astronomy will be emphasized. Two hours lec. and two hours independent observational astronomy a week. Pr.: PHYS 191.

PHYS 497. Senior Research in Physics. (1–3) I, II, S. Individually directed research in atomic physics, condensed matter, particle physics or physics education. Students in the Arts and Sciences honors program should enroll in PHYS 498 and PHYS 499 instead of PHYS 497. May be repeated once. Pr.: Senior in physics and permission of instructor.

PHYS 498. Honors Tutorial in Physics. (1–3) I, II, S. Individually directed research in physics, normally taken as a preparation for writing an honors thesis. Open only to students in the arts and sciences honors program. May be repeated once to a total of three credit.

PHYS 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the Arts and Sciences honors program.

PHYS 506. Physics Laboratory. (3) I. The completion of several experiments of current and/or historical interest in physics. Students develop skills in and knowledge of measurement techniques using digital and analog instruments. Various data analysis techniques are used. One hour recitation and six hours lab per week. Pr.: PHYS 325 and the ability to write computer programs in one of the following languages: BASIC, Pascal, FORTRAN, C, or C++.

PHYS 515. Physics for Science Teachers. (1–4) Study of current topics in physics, with laboratory experience and demonstration of the processes or phenomena under consideration. Topics and activities will be directed toward providing teachers with material for demonstrations and student experiments or projects. Examples of topics are: solar power, laser applications, holography, and subnuclear particles, relativity, or the historical development of some physical concept. May be repeated for a maximum of 6 hours credit. Pr.: One year of college physics.

PHYS 522. Mechanics. (3) I. Principles of statics and dynamics of systems of particles and rigid bodies using the methods of calculus. Three hours of lecture per week. Pr.: PHYS 224, 472.

PHYS 532. Electricity and Magnetism. (3) II. An introduction to electromagnetism. Detailed examination of electromagnetic fields in static cases. Development of Maxwell's equations for dynamic cases. Three hours of lecture per week. Pr.: PHYS 472; MATH 240.

PHYS 553. Introduction to the Physics of Lasers. (3) I. A study of the physics of lasers. Survey of current laser systems. Technological applications. Pr.: PHYS 214.

PHYS 562. Introduction to Quantum Mechanics. (3) II. An introduction to quantum mechanics. Topics include solutions to the time independent Schrödinger equation, descriptions of one-electron and multi-electron atoms, electron spin and magnetic moments. Three hours of lecture per week. Pr.: PHYS 325, 522.

PHYS 564. Thermodynamics and Statistical Physics. (3) I. An introduction to thermodynamics developed from the concepts of statistical physics. Applications include the gas laws, concepts of heat and work, phase transitions, and kinetic theory with applications to statistical physics. Pr.: PHYS 522; MATH 240.

PHYS 616. Advanced Physics Laboratory. (1–3) I. The completion of experiments in addition to those completed in Physics 506. Six hours of lab per week. Pr.: PHYS 506 and senior standing.

PHYS 620. Teaching University Physics. (3) I, in alternate years. A discussion of techniques which will aid in the development of understanding of the concepts in physics. Emphasis is placed on models of learning and teaching techniques which can be applied to the teaching of contemporary physics to university students. These models and techniques are used to analyze a teaching approach of a topic, such as quantum mechanics, which is important to today's physicist. Three class hours per week. Pr.: PHYS 562.

PHYS 623. Oscillations, Waves and Relativity. (3) I, in alternate years. A study of the theoretical aspects of linear and non-linear oscillating systems and the theory of special relativity. Topics include periodic motion, coupled oscillations, Fourier analysis, mechanical and electromagnetic waves. Special relativity is introduced through its foundation in electromagnetism. Pr.: PHYS 472, 522, and 532.

PHYS 636. Physical Measurements and Instrumentation. (4) II. A laboratory-oriented course to acquaint students with electronic circuits, their interfacing with measuring instruments, and their use in making physical measurements. Two hours lec. and six hours lab a week. Pr.: PHYS 214.

PHYS 639. Computations in Physics. (3) II, in alternate years. An introduction to applying computational and numerical techniques to solve problems of interest to physicists. Topics include the application of computational solution of ordinary and partial differential equations, Fourier analysis, and numerical integration to physical situations. Students will use both personal computers and advanced workstations. One hour lecture, two hours of computer lab per week. Pr.: PHYS 472, one physics course at the 500 level and a working knowledge of FORTRAN, BASIC, C or Pascal computer language.

PHYS 642. Nuclear Physics. (3) An introduction to the structure of the nucleus, radioactivity and nuclear energy; the application of quantum mechanics to describe nuclear physics. Offered on sufficient demand. Pr.: PHYS 562.

PHYS 651. Introduction to Optics. (3) I, in alternate years. Introduction to modern concepts in optics: electromagnetic waves, propagation of light through media, geometrical optics of lenses and mirrors, interference, coherence, Fraunhofer and Fresnel diffractions. Three hours of lec. a week. Pr.: PHYS 214.

PHYS 652. Applied Optics and Optical Measurement. (3) II, in alternate years following PHYS 651. Topical approach oriented toward measurements including coherence, Fourier optics, holography, light scattering, interferometry, laser technology. Three hours of lec. a week. Pr.: PHYS 651.

PHYS 655. Physics of Solids. (3) I, in alternate years. An introduction to the physics of solids with an emphasis on energy band structures, electrical and optical properties of solids and solid state devices. Three hours of lecture per week. Pr.: PHYS 562.

PHYS 691. Introduction to Astrophysics. (3) II, in alternate years. An introduction to the application of physical principles to understanding astronomical objects. Topics include properties of stars, stellar evolution, galaxies, and cosmology. Three hours of lecture per week. Pr.: PHYS 325, 522, 532.

PHYS 692. Introduction to Cosmology. (3) II, in alternate years. An introduction to the physics and astrophysics of the hot big bang model of the universe. Three hours of lec. a week. Pr.: PHYS 522.

PHYS 694. Particle Physics. (3) II, in alternate years. An experimental and phenomenological introduction to high energy physics. The course will emphasize understanding the experimental basis of what is known about the subnuclear domain. Students will be asked to design simple conceptual experiments in addition to solving problems. Three hours of lecture per week. Pr.: PHYS 562.

PHYS 701. Cosmology. (3) I, in alternate years. A general-relativity-based discussion of the physics of the hot big bang model of the universe. Pr.: PHYS 692.

PHYS 707. Topics in Physics. (Var.) I, II, S. Special topics courses. Topics and credits announced for the semester in which offered. May be given in conjunction with lecture series by visiting scientists. Pr.: Graduate standing or senior standing and consent of instructor.

PHYS 709. Applied Quantum Mechanics. (3) I. A study of Schrödinger's theory of quantum mechanics and its application to one electron atoms, multielectron atoms, quantum statistics, spectra of molecules and selected topics in quantum excitations of solids, nuclear physics, and elementary particles. Three hours of lecture per week. Pr.: PHYS 562.

Political Science

Dale Herspring,* Head

University Distinguished Professor Suleiman; Professors Herspring,* L. Richter,* W. Richter,* and Tummala;* Associate Professors Bagby, Franke,* Michie,* and Unekis;* Assistant Professors Emizet, Fliter, and Pickering. Emeritus: Professors Hajda* and Williams;* Associate Professors Ambrosius* and Gustafson.*

The major in political science acquaints students with political aspects of society and encourages them to develop a critical and imaginative perspective on public issues. The program in political science provides the foundation for a liberal education, including the intellectual skills of critical analysis, writing, and discussion. It also emphasizes the importance of continuing involvement in political activity and public affairs. These educational experiences prepare our students for a variety of careers in fields including public service, business, teaching, research, journalism, public relations, and administration.

A political science major should complete a broad liberal arts program that includes study in related social sciences and provides familiarity with computer applications, statistics, and mathematics as basic tools describing and explaining political phenomena.

Advising and specialized curricula

Advising by faculty members

All members of the faculty advise students. Students may request a particular advisor; otherwise one will be assigned. In addition to their academic background in political science, several faculty have nonacademic career experiences in national and international government, business, and party politics. Students will find this useful as they plan their own careers.

Specialized curricula

The department participates in a number of interdisciplinary curricula and activities and encourages students to take advantage of these. In most instances, the requirements for these programs or secondary majors also fulfill college or political science department requirements, making it possible to finish both the major and a secondary major within the required 120 hours for graduation. More extensive information on these programs and secondary majors is available from the faculty listed here as contact people, from other members of the political science department, or elsewhere in this catalog.

International studies

Students interested in the multidisciplinary study of the relations among countries, or in the study of world regions, may wish to pursue a secondary major in international studies. Advisors: Aruna Michie, 222 Waters Hall, or Dale Herspring, 226 Waters Hall.

Women's studies

The women's studies program focuses on the roles of women in society, the major institutions that shape those roles, images of women in a variety of creative media, and the status of women both across time and around the world. For more information contact Bonnie Nelson, 3 Leasure Hall, or Linda Richter, 243 Waters.

American ethnic studies

This program focuses on the variety of ethnic groups in the United States. Students learn to live and work in a multiethnic society. Contact Juanita McGowan, director, 3C Leasure Hall.

Gerontology

The Center on Aging coordinates programs and courses on social, cultural, economic, political, and other aspects of aging and the elderly. Interested students may pursue a secondary major in gerontology. For information see Professor James Franke, 241 Waters Hall.

Internships and community service for credit

Students may gain practical experience and academic credit by participating in internships in city, county, state, national, or international governments and organizations or through K-State's Community Service program. Contact advisor Linda Richter, 229 Waters Hall, or Carol Peak, director, Community Service Program, 8D Edwards Hall.

Study abroad for credit

Opportunities exist for summer, one semester, or a full year of study abroad in many countries. These are coordinated through the Study Abroad Office on campus. Credits earned may be transferred back to K-State in consultation with appropriate departmental faculty. Many programs are exchanges where tuition costs are the same as studying at K-State. Contact advisor Aruna Michie, 222 Waters Hall, or Barry Michie, director, Study Abroad Office, 304 Fairchild Hall.

Requirements for the major

A major consists of a minimum of 36 credit hours in political science, distributed as follows:

Introductory courses

POLSC 301	Introduction to Political Thought	3
POLSC 325	United States Politics	3
POLSC 333	World Politics	3
POLSC 344	Introduction to Comparative Politics	3

Methods course

To be taken after completion of at least 2 of these 3 introductory courses: POLSC 325, 333, and 344:

POLSC 400	Political Inquiry and Analysis	3

Advanced courses

To be taken after POLSC 400. Intersession courses cannot be used to fulfill these requirements. One course, at the 500 level or above, in each of the following areas:

Political philosophy	3
American government and politics	3
International relations	3
Comparative government and politics	3

Electives

Nine hours, including any political science course except for POLSC 350 Current Issues. Only 3 hours of the major are allowed to be readings, problems, internships, or similar courses that do not involve scheduled meetings of the class.

Information for dual majors and nonmajors

The political science program is often advantageously combined with another major. Those seeking dual majors should coordinate their program in consultation with advisors in each area.

Minor in political science

Basic courses

POLSC 301	Introduction to Political Thought	3
POLSC 325	U.S. Politics	3
POLSC 333	World Politics	3
POLSC 344	Introduction to Comparative Politics	3

Additional requirements

Three political science electives, of which at least two must be at the 500-level or above. POLSC 350 cannot fulfill this requirement.

Total electives	9
	21

Political science courses

POLSC 107. Political Science Colloquium. (2) I, II, S. Offered by TELENET. Topics in political science chosen to illustrate current research of political scientists and approaches to the study of politics. Each time the course is offered, a syllabus will outline the topics to be studied and the way the course will be administered. May be repeated once. Not open to political science majors.

POLSC 110. Introduction to Political Science. (3) I, II, S. Introduction to politics, public policy, and governmental processes. Distribution and use of political power, political thought, public opinion, groups, parties, institutions, public law, careers in politics, and related topics.

POLSC 111. Introduction to Political Science, Honors. (4) Introduction to politics, public policy, and governmental processes. Distribution and use of political power, political thought, public opinion, groups, parties, institutions, public law, careers in politics, and related topics. Pr.: Membership in arts and sciences honors program.

◆POLSC 301. Introduction to Political Theory. I, II. An introduction to the major themes and leading writers in Western political philosophy and a discussion of their application to modern politics. This course emphasizes learning how to read and appreciate classic texts. Pr.: Sophomore standing.

POLSC 321. Kansas Politics and Government. (3) An introduction to the political institutions of, the political behavior in and surrounding, and the public policies flowing from governmental units in the state of Kansas.

◆POLSC 325. United States Politics. (3) I, II, S. The national government with emphasis on constitutional principles, basic structure, functions, and the political process.

POLSC 326. United States Politics, Honors. (4) II. The national government with emphasis on constitutional principles, basic structure, functions, and the political process.

◆POLSC 333. World Politics. (3) I, II. Introduction to the study of politics among nations-states and other world actors, including a survey of major contemporary problems of world politics and focusing on the pursuit of power, order, wealth, and safe environment.

◆POLSC 344. Introduction to Comparative Politics. (3) I, II. Comparative analysis of politics in both "developed" and "developing" countries. Though some attention will be given to abstract and theoretical concepts, the emphasis will be on the actual political process in the countries selected for study.

POLSC 350. Current Political Issues. (2) I, II. Each week a different political science faculty member or guest authority explains and analyzes current developments in state, national, and world affairs, using the news media as text material. Not for major credit. May be repeated once.

POLSC 355. Contemporary Issues. (3) Study and analysis of selected political topics of immediate relevancy and concern. May be repeated once.

POLSC 366. Practical Politics. (3) II. Strategies and techniques of running for office, organizing a campaign, mobilizing community resources, direct action lobbying, and related practical aspects of local level citizen politics.

POLSC 377. Introduction to Public Policy. (3) I. The process of public policy formation and analysis with emphasis on theories of decision-making, the relationship between decisions taken, values maximized, and the social impact of these decisions. Pr.: POLSC 110 or 325 or another social science course.

◆POLSC 399. Honors Seminar in Political Science. (1–3)

POLSC 400. Political Inquiry and Analysis. (3) Underlying principles and techniques used in the conduct of political science research. Pr.: Introductory social science course or consent of instructor.

POLSC 401. Topics in Politics. (1–3) Different subjects in politics are selected for intensive study. May be repeated for a total of 6 hours with advisor's approval.

POLSC 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

American government and politics

POLSC 507. Introduction to Public Administration. (3) I. The basic concepts of public administration, with emphasis on orientation for citizen understanding; the place of administration and the role of the administrator in the American political process; the organization and activities of government in carrying out public policy; administrative functions, organization, accountability, finance, and personnel. Pr.: POLSC 110 or 325 or ECON 110.

POLSC 508. The Mass Media and Political Campaigns. (3) I. Examines the role of the mass media in the electoral process. Dynamics of voter decision making and the impact of the media on voter attitudes and choices. Pr.: POLSC 325.

POLSC 603. Political Parties and Elections. (3) I. Origins, structure, and function of political parties. Dynamics of the two-party system. Roles of third parties. Analysis of election results and voting behavior. Pr.: POLSC 110, 325, or junior standing.

POLSC 604. Interest Groups and Public Opinion. (3) II. Group theory and politics. Structure, internal politics, and techniques of interest groups and their impact on public policy. Formation and measurement of public opinion. Pr.: POLSC 110 or POLSC 325.

POLSC 605. The American Presidency. (3) The presidency as an institution, its evolution, congressional relationships, executive organization. Pr.: POLSC 110, 325, or junior standing.

POLSC 606. Gender and Politics. (3) II. Analysis of the role of gender in political behavior, including sexual differences in voting and political participation, legal and cultural restrictions on women's rights and political activity, and women's liberation and other sex-based political movements. Pr.: SOCIO 545, 105, POLSC 325.

POLSC 607. Administrative Law. (3) II. Legal analysis of the rule-making, adjudicatory, and enforcement functions of administrative agencies, with emphasis on constitutional framework, judicial review, requirements of procedural fairness, and rights of public employees. Pr.: One course in political science, U.S. history, or legal or political philosophy.

POLSC 611. The Legislative Process. (3) II. Legislative decision-making in modern democracy with emphasis on the United States, the concept of representation, and political behavior of participants in the legislative process. Pr.: POLSC 110, 325, or junior standing.

POLSC 612. The Judicial Process. (3) The structure, process, and politics of the American judicial system. Analysis of important issues concerning law and courts. Pr.: POLSC 325.

POLSC 614. Constitutional Law I. (3) I. Principles of the American Political System as prescribed by the Constitution and interpreted by Supreme Court decisions, with emphasis on the institutions and powers of the national government, federalism, and property rights. Pr.: One course in political science, U.S. history, or legal or political philosophy.

POLSC 615. Constitutional Law II. (3) II. The Constitution as a limitation on governmental power, with emphasis on Supreme Court decisions defining fundamental civil rights and liberties. Pr.: One course in political science, U.S. history, or legal or political philosophy.

POLSC 618. Urban Politics. (3) I. Fundamental problems of political power and decision making in urban-suburban governmental settings. Pr.: POLSC 110 or 325.

POLSC 620. State and Local Government. (3) II. The U.S. system of federalism with emphasis on a comparative analysis of the government and politics of the fifty states and their subdivisions. Pr.: POLSC 110 or 325.

POLSC 708. Public Personnel Administration. (3) I. Personnel aspects of administration at all levels of government, including recruitment, selection, discrimination law, pay, and motivation. Particular attention is paid to those features unique to the public sector, e.g. civil service systems, public unions, and public sector ethics law. Pr: POLSC 507 or 607.

POLSC 710. Policy Analysis and Evaluation. (3) II. Methods of policy analysis and evaluation. Includes a discussion of the relationship between public policy and the distribution of values in society. Students analyze polices in an area of choice; e.g., agriculture, business, health, income, trade. POLSC 325 or 507.

POLSC 735. Public Organizational Theory. (3) I. Theories on structure and mission of public organizations. An exploration of the use of anlytical questioning of various theories to solve organizational problems. Pr.: POLSC 325 or 507.

POLSC 737. Public Budgeting. (3) I. Budgeting as part of our political system and as a fiscal process that assists in allocating scarce resources. Overview of the budgetary decision-making process and the various budgetary approaches. Pr.: POLSC 507 or MANGT 420.

Comparative government and politics courses

POLSC 504. Political Sociology. (3) II, in even years. An introduction to the principles of political sociology. Processes of political socialization, participation within and outside established organizational channels, recruitment of elites, communication and influence, power, decision making, and policy outputs. Data are presented from a cross-national perspective. Pr.: SOCIO 211; POLSC 110. Same as SOCIO 504.

POLSC 505. Introduction to the Civilization of South Asia I. (3) I. An interdisciplinary survey of the development of civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including consideration of the geographical and demographic context, dominant philosophical and social concepts, social and political institutions, literature and historical movements. Same as HIST 505, ECON 505, SOCIO 505, ANTH 505.

POLSC 506. Introduction to the Civilization of South Asia II. (3) II. Interdisciplinary survey of recent and contemporary civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including recent history, current economy, religion, culture, languages and literature, geography, social and political structures and ideas. Same as ECON 506, HIST 506, SOCIO 506, ANTH 506.

POLSC 511. Contemporary Chinese Politics. (3) Principal components of Communist Chinese ideology, conditions determining organizational structure, composition of present leadership, role of social forces, impact of external relations on other Asian nations and on the major world powers.

POLSC 545. The Politics of Developing Nations. (3) II. Comparative analysis of politics in emergent states with emphasis on processes of modernization and nation building. Pr.: POLSC 110 or 344 or sophomore standing.

POLSC 619. Comparative Agriculture Politics and Policy. (3) I. Comparative examination of agricultural politics and policy with emphasis on decision making processes and the socio-political impacts of agricultural policy. Pr.: POLSC 110 or 344.

POLSC 621. West European Politics. (3) I. Comparative analysis of politics in the United Kingdom, Germany, France, and Italy. Pr.: POLSC 110 or 344 or junior standing.

POLSC 622. Latin American Politics. (3) I. Comparative analysis of selected political systems of Latin America emphasizing political inputs, political organization, and political outputs. Special consideration is given to problems of political change. Pr.: POLSC 110 or 344 or junior standing.

POLSC 623. South Asian Politics. (3) Analysis of selected political systems of South Asia. Pr.: POLSC 344, POLSC 505 and POLSC 506.

POLSC 624. Middle Eastern Politics. (3) II. Comparative analysis of selected political systems in the Middle East including nationalism and the conflict of differing ideologies. Pr.: POLSC 110, 344, or junior standing.

POLSC 626. African Politics. (3) Comparative analysis of selected political systems of sub-Sahara Africa, including consideration of problems of nationalism and political development. Pr.: POLSC 110, 344, or junior standing.

POLSC 627. Eastern and Central European Politics. (3) II. Examination of contemporary politics and policy in the countries of Eastern and Central Europe. Pr.: POLSC 110, 344.

POLSC 629. Development Policy and Administration. (3) I. Comparative examination of development policy, politics, and administration. Pr.: POLSC 110, 344, 377, 507.

POLSC 630. Politics of Russia and the Former Soviet Union. (3) II. Primary focus will be on problems involved in the transition from communism to a more democratic policy. Pr.: POLSC 344.

POLSC 631. Comparative Civil-Military Relations. (3) I. A look at civil-military relations in the U.S., Russia, Germany, Spain, and a number of other countries. Primary focus will be on understanding the political role of the military in totalitarian, authoritarian, and democratic states. Pr:. POLSC 344.

POLSC 707. Comparative Administrative Systems. (3) I. A comparative analysis of public administration concepts and the morphology of administrative systems. Included are U.S., British, and French models and attempts by Third World countries to adapt these to their local cultures. Pr.: POLSC 344, or 507.

International relations courses

POLSC 541. International Relations. (3) II. Analysis of the nature of international relations with emphasis on contemporary theories explaining the international behavior of states. Pr.: POLSC 333.

POLSC 543. American Foreign Policy. (3) II. Examination of American external relations since 1945 and evaluation of processes involved in the formulation and conduct of contemporary foreign policy of the United States. Pr.: POLSC 325 or 333.

POLSC 642. International Conflict. (3) II. The nature of political conflicts in the world and the "types" of such conflicts. Emphasis is on determining the "causes" of the various conflict types as well as providing the student with a better understanding of the conflict process from political dispute through the escalation stages to war. Pr.: POLSC 333 and junior standing.

POLSC 645. International Politics of Europe. (3) II. Relationships among the countries of Europe since World War II. Particular focus will be on efforts to create a more unified European Community. Among the organizations that will be studied are the former Warsaw Pact, NATO, the European Parliament, and the European Union. Pr.: POLSC 333.

POLSC 647. International Law. (3) Theories of international law, and general problems, such as: recognition, responsibility, war crimes, sources, evidence, codification, and settlement of disputes. Pr.: POLSC 333, 541, or junior standing.

POLSC 649. International Defense Strategies. (3) I. Contemporary international strategies and defense policies with emphasis on nuclear, conventional, and guerrilla war, arms control and disarmament, diplomatic and political roles of the military. Pr.: POLSC 333, 541, or junior standing.

POLSC 651. International Organization. (3) Structure, functions, values, and effectiveness of international organizations with emphasis on the United Nations, Common Market, and other regional arrangements. Pr.: POLSC 333, 541, or junior standing.

POLSC 652. International Politics of South Asia. (3) Consideration of regional problems of South Asia and international roles and foreign policies of South Asian states. Pr.: POLSC 344 or POLSC 623.

POLSC 653. International Politics of the Middle East. (3) I. Consideration of the Arab-Israeli conflict, inter-Arab relations, foreign policies of Middle Eastern states, and the impact of the major foreign powers on the area. Pr.: POLSC 333, 344, or three hours of other social sciences.

POLSC 654. International Politics of Africa. (3) The course analyzes contemporary relations among African countries including economic and political security, border claims, formal and informal economic relations, and regional groupings. The course also examines the relations between African countries, the United States and the former Soviet Union, and between African countries and the former colonial rulers. Pr.: POLSC 333, 344, or junior standing.

POLSC 754. The Professional Diplomat and Foreign Policy Formulation. (3) I. Present-day foreign policy formulation in the United States government, including especially the role therein of professional diplomats and foreign affairs specialists in the State Department and embassies abroad, as well as within other U.S. governmental agencies. Pr.: POLSC 333.

POLSC 756. International Political Economy. (3) The course introduces students to the political and historical dimensions of the international economy, dimensions that include trade, monetary systems, foreign investment, aid, dependency, and global interdependence. This course also examines various theories and practices of the international system, the state, bureaucracies, interest groups, international organizations, bargaining processes, and distributive norms. Pr.: ECON 110, ECON 120, POLSC 333, POLSC 344, POLSC 541, or junior standing.

Political thought courses

POLSC 661. Political Thought: Classical to Sixteenth Century. (3) I. Systematic study of ideas about law, politics, and government of great philosophers of Western civilization from Greek antiquity to the sixteenth century. Pr.: POLSC 110, 301, or junior standing.

POLSC 663. Political Thought: Since the Sixteenth Century. (3) I. Study of the development of Western political thought from the sixteenth century to the twentieth century. Pr.: POLSC 110, 301, or 325.

POLSC 667. American Political Thought. (3) I. Political ideas underlying the American union, including the doctrine of rights, the nature of union, liberty, property, and democracy. Pr.: POLSC 110, 301, 325, or three hours in other social sciences.

POLSC 671. Modern Political Thought. (3) Study of contemporary political ideas and social thought. Pr.: POLSC 110, 301, or junior standing.

POLSC 672. Ideologies: Their Origins and Impact. (3) II. Explores ideologies, including liberalism, conservatism, socialism, communism, and fascism. Their philosophical origins, transformation into systems of thought with mass appeal, and practical consequences are discussed. The conflict between ideology and philosophy is examined. Pr.: POLSC 110, 301, or 3 hours of philosophy.

POLSC 675. Religion and Politics. (3) II. Focuses on religious life in America and its changing relationship to politics and government. Examination of the American founding as it relates to church/state issues, the controversy over meaning of the First Amendment's establishment and free exercise clauses, and contemporary political agendas of mainline and evagelical churches. Pr.: POLSC 110, 301, 325, or 3 hours in other social sciences.

POLSC 711. Administrative Ethics. (3) I. Ethical issues, approaches, and strategies in public service. Pr.: POLSC 325 or 507 or graduate standing, or consent of instructor.

Methods, seminars, readings, and problems courses

POLSC 555. Senior Honors Seminar. (3) Open only to seniors in the College of Arts and Sciences honor program.

POLSC 700. Research Methods in Political Science. (3) I. Principles of research design, measurement of political phenomena, methods for collecting and analyzing political data. Pr.: POLSC 325, 333, or 344.

POLSC 701. Computer and Quantitative Analysis in Political Science. (3) Advanced data management, data analysis, and computing skills involved in conducting political science and public policy research. Pr.: POLSC 400 or 700; STAT 330 or equiv.

POLSC 784. Internship in Government, Public Administration, and Politics. (1–3, Credit/No Credit only.) I, II, S. Supervised field work at the international, national, state, and local levels of government or with political parties or other politically oriented voluntary organizations. May be repeated once. Pr.: Consent of instructor and a minimum of two courses in political science, at least one of which must be relevant to the internship area.

POLSC 785. Readings in Political Science. (3) I, II. Students will undertake directed reading and discussion of a selected topic in political science. Pr.: Consent of instructor.

POLSC 790. Problems in Political Science. (3) I, II. Students will complete a research project and prepare an original paper under the supervision of a faculty member. Pr.: At least 6 hours in social sciences and consent of instructor.

POLSC 791. Topics in Political Science. (3) I, II. Extensive exploration of a specific problem in political thought, American government, comparative politics, international relations, and public administration. May be repeated for a total of 6 hours in two subfields. Since topics will cover different areas in political science, prerequisites will be determined by the department as appropriate when the course is offered.

POLSC 799. Pro-Seminar in Political Science. (3) I, II. Study and analysis in various areas of the discipline with emphasis on critical evaluation of political conflicts and issues. Pr.: Consent of instructor.

Psychology

Stephen W. Kiefer,* Head

Professors Barnett,* Cowan,* Downey,* Frieman,* Griffitt,* Harris,* Kiefer,* Rappoport,* Shanteau,* Thompson,* and Uhlarik;* Associate Professors Cozzarelli,* Fullagar,* and Knight.* Emeriti: Professors Mitchell,* Perkins,* Phares,* Rohles,* and Samelson.*

Psychology major

The psychology major provides students with an understanding of how psychologists study behavior. Additionally, students are exposed to what psychologists have learned about behavior. The knowledge and skills students obtain are useful in a wide variety of employment settings and careers. Additional course work and experiences are available for students preparing for advanced study at the graduate level and for students interested in careers in social services and in human resources. The minimum requirements for completing a major in psychology are small enough that some students are able to complete the requirements of a second major in the College of Arts and Sciences or a second degree in another college in four years.

Psychology is both an academic discipline and a profession. To be a professional psychologist, one must receive advanced training. Our undergraduate program in psychology does not train people to become professional psychologists; however, we do offer students the opportunity to earn academic credit for participating in research and for supervised field experiences in social service agencies, industry, and government settings. Thus, students can gain experience working with professional psychologists.

Entrance requirements

To become a psychology major, a student must:

A. Present evidence of having earned a cumulative GPA of at least 2.50 (on a 4 point scale) based on a minimum of 15 credit hours earned at Kansas State University and sophomore standing (a minimum of at least 30 total credit hours, including transfer hours);

or

B. Present evidence of 60 or more transfer credit hours from another accredited institution with a GPA of at least 2.50.

To graduate from Kansas State University with either a bachelor of arts or a bachelor of science degree in psychology, a student must fulfill the university, college, and departmental requirements, and have a cumulative GPA of 2.5 or greater on all work undertaken at Kansas State University.

Psychology majors may enroll in any classes offered by the Department of Psychology for which they have the prerequisites.

Students interested in majoring in psychology who have not yet satisfied one of the two standards described above will be designated as pre-psychology majors. Pre-psychology majors can enroll in any course offered by the Department of Psychology except the following:

PSYCH 350	Experimental Methods in Psychology
PSYCH 460	Cognitive Psychology
PSYCH 475	Principles of Learning
PSYCH 480	Fundamentals of Perception and Sensation
PSYCH 605	Foundations of Social Behavior
PSYCH 620	Psychology of Personality

Requirements for the major

In addition to the general requirements for a B.A. or B.S. degree in the College of Arts and Sciences the undergraduate major in psychology consists of the following set of required courses:

PSYCH 110	General Psychology	3
PSYCH 200	Junior Seminar in Psychology	1
STAT 330	Elementary Statistics for Social Sciences	3
PSYCH 350	Experimental Methods in Psychology	5

Two courses from:

PSYCH 460	Cognitive Psychology	3
PSYCH 470	Psychobiology	3
PSYCH 475	Principles of Learning	3
PSYCH 480	Fundamentals of Perception and Sensation	3

One course from:

PSYCH 605	Foundations of Social Behavior	3
PSYCH 620	Psychology of Personality	3

Psychology electives 12

The Department of Psychology offers a 1-hour Freshman Seminar (PSYCH 100). This course is not required; however, it is highly recommended for freshman students coming directly from high school.

Psychological technician options

Opportunities are growing for psychological technicians who have B.A. or B.S. degrees in psychology. Such a person usually works in an applied setting and carries out duties that are supportive of the Ph.D. psychologist. The clinical psychological technician often assists in such activities as testing, behavior change, community organization, agency management (budgets, referrals, scheduling), research, data collection and statistical analysis, etc. Technicians and paraprofessionals are playing an increasingly prominent role in clinics, hospitals, industrial and governmental agencies, and research settings.

The industrial psychological technician often serves as an assistant in job analysis, personnel selection, performance appraisal, training and leadership functions, and research on worker motivation, job satisfaction, organizational behavior, etc.

The psychological technician option is designed to provide students with background knowledge and limited training in the skills most likely to be needed by a psychological technician and with supervised experience in an applied setting. Furthermore, the student is expected to take additional courses in relevant areas from other departments in the university.

The requirements for the psychological technician option reflect the goals stated above. All students in the option must satisfy the requirements for the psychology major. In addition, the following courses must also be completed:

Clinical option

PSYCH 505	Abnormal Psychology	3
PSYCH 559	Psychological Testing	3
PSYCH 585	Basic Concepts in Clinical Psychology	3
PSYCH 586	Laboratory in Clinical Concepts	2
PSYCH 587	Field Placement	3

Four other courses relevant to the mental health field from psychology, sociology, anthropology, social work, education, and human ecology.

All of these courses can be applied either as general electives or as psychology electives.

Industrial option

PSYCH 559	Psychological Testing	3
PSYCH 560	Industrial Psychology	3
PSYCH 561	Laboratory in Industrial Psychology I	2
PSYCH 562	Laboratory in Industrial Psychology II	2
PSYCH 564	Psychology of Organizations	3
PSYCH 587	Field Placement	3
MANGT 530	Industrial and Labor Relations	3

One computer science course with laboratory

One additional relevant course from business administration or elsewhere.

All of these courses can be applied either as general electives or as psychology electives.

The laboratories in clinical psychology or industrial psychology should be taken either after completion of or concurrently with Psychological Testing and Basic Concepts in clinical psychology or industrial psychology, respectively. Following successful completion of the laboratory course and with the approval of the psychological technician supervisory committee, students can gain supervised experience in an applied setting. Arrangements for the field experience will be worked out individually with each student regarding the location of the agency and the total number of academic credit hours to be earned (PSYCH 587 Field Placement).

Psychology courses

PSYCH 100. Freshman Seminar. (1) I. An orientation and introduction to the field of psychology for freshman psychology majors only. Additional emphasis on the means by which psychological principles can be used to adapt to college life.

◆PSYCH 110. General Psychology. (3) I, II, S. An introductory survey of the general content areas of psychology, including methods, data, and principles.

◆PSYCH 115. General Psychology (Honors). (4) I, II. An introductory survey of the general content areas of psychology, including methods, data, and principles.

PSYCH 200. Junior Seminar in Psychology. (1) I. Discussion of professional, research, and educational methods and objectives in psychology. Acquaints psychology majors with psychology as a profession, and with the various options available to them at various levels of training.

Should be taken during first semester of junior year. Pr.: Junior standing.

◆**PSYCH 202. Drugs and Behavior.** (2) I, S. Effects of drugs on human performance, cognition, and physiological processes will be discussed and the empirical evidence surveyed and critically evaluated in relation to both use and abuse of drugs in society. Pr.: PSYCH 110.

◆**PSYCH 280. Psychology of Childhood and Adolescence.** (3) I, II. Survey of behavioral development from birth through adolescence. Pr.: PSYCH 110.

PSYCH 290. Innovative Studies in Psychology. (1–6) I, II. Topics selected in consultation with the instructor. To be used for interdisciplinary and innovative approaches to psychological topics. Pr.: Consent of instructor.

PSYCH 330. Introductory Seminar in Industrial and Labor Relations. (1) II. A multidisciplinary introduction to the field of industrial and labor relations. Examines the economic legal psychological and sociological aspects of the field.

PSYCH 350. Experimental Methods in Psychology. (5) I, II. Laboratory investigation of learning, motivation, social-personality processes, and perception and sensation. Includes three hours rec. and four hours lab a week. Pr.: PSYCH 110. (Psychology majors only.)

◆**PSYCH 399. Honors Seminar in Psychology.** (3) II. Selected topics. Open to nonmajors in the honors program.

PSYCH 400. Practicum in Teaching Psychology. (1–4) I, II. Supervised experience in presentation of psychological concepts in various classes. May be taken only with approval of the instructor of a general psychology class under whose supervision the student will obtain this experience. Pr.: Nine hours of psychology including PSYCH 110; junior standing; consent of instructor.

PSYCH 425. Problem Solving and Decision Making. (3) II. Provides both the psychological background and practical aids to help solve problems in everyday decision making. Skills to be covered include creativity, methods of problem solving, memory aids, decision-making tools, avoiding biases of judgment, etc. Pr.: PSYCH 110.

PSYCH 450. Applications of Memory. (3) II. Examination of the applications of memory in such diverse areas as courtroom testimony, expert performance, mnemonic procedures, and advertising. Relevant theories and research in each area are examined. Pr.: PSYCH 110.

PSYCH 460. Cognitive Psychology. (3) I, II. A survey of the manner in which people extract and use relevant information from their environment as a basis for behavior. Topics may include memory storage and retrieval, attention, imagery, mnemonic devices, decision making, and other cognitive processes. Pr.: PSYCH 350. (Psychology majors only.)

PSYCH 470. Psychobiology. (3) I, II. Behavior from a biological point of view. Topics include: behavioral neuroscience techniques, sensory coding, food and water intake, sexual behavior, sleep and waking, memory, and learning. Pr.: BIOL 198, PSYCH 110.

PSYCH 475. Principles of Learning. (3) I, II. Introduction to the principles of learning and their relevance to the understanding of the behavior of animals and humans. Pr.: PSYCH 350. (Psychology majors only.)

PSYCH 480. Fundamentals of Perception and Sensation. (3) I, II. Empirical and theoretical approaches to phenomena of sensation and perception. Pr.: PSYCH 350. (Psychology majors only.)

PSYCH 490. Honors Tutorial in Psychology. (1–3) I, II. Individual directed research and study of a topic in psychology, normally as a preliminary to writing a senior honors thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the honors program of the College of Arts and Sciences, and permission of instructor.

PSYCH 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

PSYCH 505. Abnormal Psychology. (3) I, II, S. An introductory study of behavior pathologies, with emphasis on their etiology and treatment. Pr.: Junior standing; PSYCH 110.

PSYCH 510. Introduction to Behavior Modification. (3) II. Study of the principles of behavior modification and applications to human behavior. Emphasis on the learning principles and research in behavior modification. Pr.: PSYCH 505.

PSYCH 518. Introduction to Health Psychology. (3) II. Psychosocial factors relevant to general health maintenance, recovery from disease or injury, and the achievement of health. Topics include stress-management techniques, personality characteristics associated with disease, cognitive-emotional effects of diet and exercise, and theories of pain and pain management. Concepts of prevention and behavioral medicine are also included. Pr.: PSYCH 110.

PSYCH 520. Life Span Personality Development. (3) I, II, S. Theories and research in the development of personality from infancy through old age. Origins of personality in heredity and early experience, socialization practices, life crises and choices at various stages throughout life, and problems of aging. Pr.: PSYCH 110; sophomore standing.

PSYCH 530. Psychology of Mass Communications. (3) II. The psychological effects of mass communication on behavior and thought, including advertising, stereotyping of women and minorities, effects on children, violence and sex in the media, effects of news on behavior, and the promotion of prosocial behavior through the media. Pr.: PSYCH 110.

PSYCH 535. Social Psychology. (3) I, II. Psychology of the individual in society. Survey of empirical studies and theoretical models of social perception, attitudes, and social behavior (e.g., attribution, ethnic and gender prejudice, conformity). Relationship of these topics to personal and media influence, social mores, and social systems is also included. Pr.: PSYCH 110.

PSYCH 540. Psychology of Women. (3) II. Investigation of psychological processes of women. A developmental sequence with emphasis on major life events for women. Female physiology, early socialization into sex roles, friendship, achievement motivation, sexuality, marriage, childbearing, work, and mental health. Pr.: PSYCH 110.

PSYCH 543. Women's Mental Health Issues. (3) II. Investigates prevalent women's mental health issues such as incidence of depression/anxiety, eating disorders, sexuality, relationship concerns. Also covers the efficacy of traditional treatment modalities and newer therapies that target women's unique mental health needs such as feminist or nonsexist therapies. Pr.: PSYCH 505.

PSYCH 545. Consumer Psychology. (3) I. Survey of psychological principles and facts in perception, learning, attitude formation, personality, etc., as they apply to behavior of consumers. Pr.: PSYCH 110 and junior standing.

PSYCH 550. Group Dynamics. (3) II. Interaction in small groups: interpersonal sensitivity, communication, decision making, development of group structure and norms. May be organized as laboratory "process" group and require some flexibility in scheduling. Pr.: Six hours in psychology.

PSYCH 557. The Psychology of Ethnic Humor. (3) S, and on sufficient demand. Reviews the structure, dynamics, and social functions of ethnic humor. Pr.: PSYCH 110 or SOCIO 211.

PSYCH 558. Varieties of Consciousness. (3) I, S. Traditional and contemporary approaches of both Western science and Eastern metaphysics to study of ordinary mind consciousness, unusual states of awareness, and efforts to expand the powers of mind. Topics include sleep, dreaming, biofeedback, meditation, psychoactive drugs, brain area dominance, and other factors influencing relationships. Pr.: PSYCH 110.

PSYCH 559. Psychological Testing. (3) II. Principles of psychological testing in industrial, clinical/counseling, and research environments. Topics include technical issues such as reliability, validity, norming, selection, placement, discrimination, etc. Also covers procedures for selecting, administering, and interpreting psychological tests. Pr.: PSYCH 110.

PSYCH 560. Industrial Psychology. (3) I, S. Survey of human behavior and psychological principles in an industrial/personnel context. Topics include: recruiting, selecting, and training personnel; evaluating their job performance; conducting job analyses; and implementing compensation strategies. Pr.: PSYCH 110.

PSYCH 561. Laboratory in Industrial Psychology I. (2) I. Supervised experience in personnel psychology including classifications, analysis, and evaluation of jobs. Pr.: PSYCH 560 or conc. enrollment.

PSYCH 562. Laboratory in Industrial Psychology II. (2) II. Additional supervised experience in personnel psychology including interviewing, EEOC regulations, training, and performance appraisal. Pr.: PSYCH 561.

PSYCH 563. Gender Issues in the Workplace. (3) I. Psychological experiences of women and men in the world of work, with emphasis on traditional and nontraditional sex-role behavior, sexual discrimination and harassment, and relevant socialization experiences. Pr.: PSYCH 110.

PSYCH 564. Psychology of Organizations. (3) II. Relationships between individuals, groups, and organizations. How organizational factors contribute to individual behavior, and how individuals affect groups and organizational functioning. Emphasis is on such traditional topics as work motivation, job satisfaction and other attitudes, leadership, communication, socialization, and organization and job design. Pr.: PSYCH 110.

PSYCH 580. Psychology of Sexual Behavior. (3) I, II. Study of psychological determinants and consequences of human sexual behavior; roles of personality, attitudinal and emotional factors will be emphasized. Pr.: PSYCH 110, sophomore standing.

PSYCH 585. Basic Concepts in Clinical Psychology. (3) I. Critical analysis of the profession. Review of theoretical and empirical bases of such areas as intelligence and its measurement, personality and diagnosis, psychotherapy, and other modes of behavioral change. Pr.: PSYCH 110, 505, and 3 additional hours of psychology.

PSYCH 586. Laboratory in Clinical Concepts. (2) I. May be taken only in conjunction with PSYCH 585. Supervised practice in, demonstration of, and orientation to selected psychological techniques and practices. Pr.: Conc. enrollment in PSYCH 585.

PSYCH 587. Field Placement. (1–6) I, II, S. Supervised field experience in an agency or institutional setting in the application of psychological techniques to individuals, groups, or organizations. Regular supervision emphasizes relationship between theory and application and the evaluation of outcomes. Pr.: PSYCH 585 and 586, or 560; 561 and 562 and consent of psychological technician training committee.

PSYCH 599. Problems in Psychology. (Var.) I, II, S. Investigation of selected problems. Pr.: PSYCH 110 and consent of instructor.

PSYCH 605. Foundations of Social Behavior. (3) II. Analysis of fundamental psychosocial processes underlying selected problems in contemporary society (e.g., effects on personality and interpersonal relations of changing sex roles, technological innovations, and historical events). Pr.: PSYCH 350. (Psychology majors only.)

PSYCH 620. Psychology of Personality. (3) I. Discussion of different approaches to the study of personality. Pr.: PSYCH 350. (Psychology majors only.)

PSYCH 625. Engineering Psychology. (3) I. The role of behavioral factors in the design and operation of machines and equipment. Pr.: PSYCH 110, STAT 330, or 707.

PSYCH 630. Human Neuropsychology. (3) II. Study of brain-behavior relationships in humans. Brief review of human neuroanatomy followed by a major emphasis on brain function in learning, memory, language, and other cognitive behaviors. Also includes an examination of behavioral alterations following brain damage. Pr.: BIOL 198 and PSYCH 110, or consent of instructor.

PSYCH 650. Psychology of Language. (3) I. Experimental study of language, including sentence comprehension and memory, language acquisition and development, speech perception, and effects of context, perception, reasoning, and linguistic structure on processing of language. Pr.: PSYCH 110 and junior standing.

PSYCH 715. Psychology of Aging. (3) II. The psychological aspects of human aging. An analysis of the contributions of experimental, developmental, and personality-social psychology to the study of aging. The psychopathology of aging and psychological intervention strategies are also covered. Pr.: PSYCH 110 or DAS 315 and junior standing.

PSYCH 775. History of Current Trends. (3) II. A review of the contributions of individuals and intellectual movements to the development of modern psychology. A survey of theoretical systems currently of influence. Pr.: PSYCH 110 and 9 additional hours of psychology; senior standing.

PSYCH 790. Topics in Psychology. (Var.) I, II, S. Pr.: PSYCH 110 and consent of instructor.

PSYCH 799. Problems in Psychology. (Var.) I, II, S. Pr.: PSYCH 110 and consent of instructor.

Sociology, Anthropology, and Social Work

Michael Timberlake,* Head

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The Department of Sociology, Anthropology and Social Work offers three separate undergraduate majors: sociology, anthropology, and social work. The sociology major has two options: general sociology and criminology. The student may enroll in a B.S. or B.A. program in any of these majors.

Sociology

Sociology is the systematic study of social relationships at many different levels. For example, sociologists analyze small groups, complex organizations such as bureaucracies or factories, race/ethnic relations, gender relations, communities, nations, and even global social formations. The processes and behaviors sociologists examine include social interaction among individuals, institutional change, social policy formation, criminal and deviant behavior (and responses to such behavior), population growth and distribution, and social change and development.

The sociology program offers concentrations in general sociology and in criminology. General sociology provides a desirable background, as either a sole or combined major, for further professional training in law, city planning, public administration, hospital administration, and medicine, as well as for advanced graduate work in sociology or other social sciences. It also prepares students for a wide variety of careers that involve problem-solving and gathering, organizing and analyzing information (i.e., data). Such careers may involve jobs ranging from sales and management to community services and government work.

The criminology concentration prepares students for careers in the criminal justice system (including law enforcement, correctional institutions, court services) as well as advanced study in law or graduate work in sociology, criminology, or criminal justice.

Students who major in sociology should refer to the general requirements for the B.A. or B.S. degree earlier in the College of Arts and Sciences section of this catalog. Sociology students who desire to teach in secondary schools should prepare for teacher certification with a major in sociology (see the College of Education section of this catalog).

All sociology majors are required to complete 6 hours of required outside courses. Students majoring in general sociology must also take 16 hours of required core courses and 15 hours of electives, with 9 of these 15 hours at the 500 level or above. Criminology students must complete 25 hours of required core courses and 9 hours of electives from two categories of ancillary courses.

Professional internship

Criminology students who anticipate working in the field of criminal justice are strongly encouraged to take the 10–13 hour sequences of courses involving the professional internship. Under special circumstances and with an advisor's direction, students in general sociology may also enroll in the internship sequence. Internship hours may not count toward the elective requirements.

General sociology major

Required outside courses (6 hours)

Three credit hours from among CIS 101, CIS 102, CIS 103, and CIS 104 (or demonstration of equivalent competencies)		3
STAT 330	Elementary Statistics for the Social Sciences	3

Core courses (16 hours)

SOCIO 211	Introduction to Sociology	3
SOCIO 440	Social Organization	3
SOCIO 450	Introduction to Social Interaction	3
SOCIO 511	Comparative Social Theories	3
SOCIO 520	Methods of Social Research I	4

With advisor's permission, students may substitute Bureaucracy in Modern Societies (SOCIO 546) for Social Organization (SOCIO 440).

Electives

Fifteen hours of sociology electives are required, with at least 9 hours at the 500 level or above. SOCIO 567, 568, 569 may not be used to count toward these required elective hours.

Sociology: Criminology option

Required outside courses (6 hours)

Three credit hours from among CIS 101, CIS 102, CIS 103, and CIS 104 (or demonstration of equivalent competencies)		3
STAT 330	Elementary Statistics for the Social Sciences	3

Core courses (25 hours)

SOCIO 211	Introduction to Sociology	3
SOCIO 361	Sociology of Criminal Justice System	3
SOCIO 432	Community Organization and Leadership	3
SOCIO 440	Social Organization	3
SOCIO 450	Introduction to Social Interaction	3
SOCIO 511	Comparative Social Theories	3
SOCIO 520	Methods of Social Research I	4
SOCIO 561	Criminology	3

With advisor's permission, students may substitute SOCIO 531 or SOCIO 533 for SOCIO 432.

With advisor's permission, students may substitute SOCIO 546 for SOCIO 440.

Electives

Nine hours of electives are required with at least one course from each of the two categories (A and B).

A. *Criminology electives*

SOCIO 362	Police and Society	3
SOCIO 460	Juvenile Delinquency	3
SOCIO 522	Sociological Field Methods	3
SOCIO 661	Corrections	3
SOCIO 665	Women and Crime	3
SOCIO 767	Societal Reactions to Deviance	3

B. *Supporting electives*

SOCIO 541	Wealth, Power, and Privilege	3
SOCIO 545	Sociology of Women	3
SOCIO 570	Race and Ethnic Relations	3

Anthropology

There are four major subfields of anthropology. Physical anthropology explores the origins of human life and the biological bases of culture. Archaeology examines the development of human cultures from prehistory and ancient civilizations to historic and modern times. Linguistic anthropology focuses on the languages and dialects of the world and the relationships of language to thought and culture. Cultural anthropology studies human behavior by surveying the range and variety of cultural traditions throughout the world. Some anthropology majors generalize, while others specialize in one or more of the subfields.

Entrance requirements for anthropology majors

Students interested in becoming anthropology majors should consult with faculty advisors. To be admitted as an anthropology major, a student must present evidence of having earned accumulative GPA of at least 2.50 based on a minimum of 15 credit hours earned at K-State. Pre-anthropology majors will be advised in the program.

Students transferring from other institutions with a GPA of 2.5 or higher will be accepted as majors when they have fulfilled the above requirements.

To graduate with a bachelor's degree in anthropology, a student must fulfill program requirements and have a cumulative GPA of 2.5 or higher on all anthropology course work undertaken at Kansas State University.

Requirements

In addition to the general B.A. or B.S. requirements, anthropology majors take a minimum of 27 hours in anthropology as follows:

Introductions to the four subfields:

ANTH 200, 204, or 210	Introduction to Cultural Anthropology	3

ANTH 220	Introduction to Linguistic Anthropology	3
ANTH 260	Introduction to Archaeology	3
ANTH 280	Introduction to Physical Anthropology	3

Capstone course:

ANTH 602	Anthropological Theory	3

Four advanced electives distributed among three or more subfields: 12 hours at or above the 500 level.

Many anthropology students prepare for the variety of occupations concerned with human relations by combining anthropological study with other training, frequently by majoring in two fields. Each program of study is worked out individually by a student and his or her advisor. Interested students may obtain additional information from the *Guide for Prospective Anthropology Majors*, which is available in the department office.

Applied anthropology option

The applied anthropology option provides preparation and experience in the application of anthropology to professional settings outside the academic environment. The option is interdisciplinary, combining anthropology with other areas of training and expertise. While the option is flexible and accommodates a wide range of individual student interests, emphasis is on three major areas: developmental/action anthropology (domestic, international, community, and rural development); cultural resource management (historic preservation, parks and museums, and public archaeology); and complex organizations (agencies, foundations, business, administration, planning, and policy analysis).

The option builds on existing requirements for a bachelor's degree in anthropology. It adds 6 hours in anthropology and 18 hours in an area specialization outside the anthropology major. Double major, dual degree, pre-professional, and secondary major programs are particularly well suited for the option. Application to participate is normally made to the anthropology faculty during or before the junior year.

In addition to the existing 27 hours of major requirements for the bachelor's degree in anthropology, the following course required:

ANTH 641	Internship in Applied Anthropology	3
	or	
ANTH 626	Internship in Museology	3

An area specialization consisting of 18 hours of course work outside anthropology with the following distribution:

Quantitative or technical skill development	6
Subject matter courses	12

The area specialization is a set of related courses focused on a particular interest, problem domain, or area of expertise taken from any other discipline or combination of disciplines. The quantitative and technical skill courses must be consistent with and supportive of the subject matter work. Students must demonstrate the coherence of their chosen area specialization and its fit with anthropology. The area specialization must be approved by the anthropology faculty.

Anthroplogy minor

A minor in anthropology is also available. Students are required to take a total of 18 hours, three of the four introductory courses to the field, i.e.:

ANTH 200, 204, or 210
ANTH 220
ANTH 260
ANTH 280
Plus three upper-level anthropology courses (for which the relevant introductory courses have been taken).

Social work

Social work is concerned with the interaction between people and their social environments. Social workers help people deal with other people, cope with the many social and environmental forces that affect and control daily life, and help solve problems that inhibit growth and development.

The undergraduate social work program is accredited by the Commission on Accreditation of the Council on Social Work Education to educate entry-level, generalist social work practitioners. The social work major is of particular value to students who intend to pursue a career in social work upon graduation.

The bachelor's degree in social work is recognized as a beginning-level professional degree. Students graduating from the social work program are eligible for licensure as bachelor degree social workers in Kansas and numerous other states. No other bachelor's degree is recognized, or necessary, for such eligibility. Students who wish to pursue graduate studies in social work will be eligible for advanced standing in many master of social work programs throughout the United States.

The intervention tasks performed by social workers are derived from a common base of knowledge, values, and skills. Thus, social workers are uniquely qualified to provide resources, services, and opportunities to individuals, groups, families, organizations, and communities. Students are required to complete a field practice placement during their senior year to integrate classroom material with practice experience in a professional setting.

Students wishing to declare a major in social work may enroll directly in curriculum SOCWK. This is a provisional admission to the social work program. Students must complete SOCWK 010, SOCWK 260, SOCWK 510, and SOCWK 515 before formal evaluation and admission to the program can occur.

Formal evaluation occurs prior to admission to SOCWK 560 Social Work Practice I, taken during the junior year. At that time each student completes a personal statement and undergoes a formal review of academic and classroom performance by the program admissions committee. Students must have a 2.3 overall GPA and a 2.75 GPA in the core courses. Students successfully passing this review may enter the first course in the practice sequence, SOCWK 560.

Failure to meet and maintain the standards of the program will result in dismissal from the social work major. A student may be allowed to remain in the major on conditional or probationary status, but he or she must meet the standards of the program to complete the major.

For complete details on the admissions requirements and procedure, see the program admissions policy in the student handbook. Appeals of program faculty decisions may be made through established departmental procedures.

A student earning a B.A. or B.S. in social work must complete 120 hours including SOCWK 010 Orientation to the Social Work Major; SOCWK 260 Introduction to Social Work; 40 additional hours of major courses; and 28 hours of tool and related courses.

Human behavior and the social environment content

SOCIO 211	Introduction to Sociology	3
SOCIO 432	Community Organization and Leadership	3
ANTH 200	Introduction to Cultural Anthropology	3
PSYCH 110	General Psychology	3
FSHS 110	Introduction to Human Development	3
SOCWK 515	Human Behavior and the Social Environment	3
POLSC 110	Introduction to Political Science	3
	or	
POLSC 301	Introduction to Political Thought	3
ECON 110	Principles of Macroeconomics	3
BIOL 198	Principles of Biology	4

Social work practice content

SOCWK 560	Social Work Practice I	4
SOCWK 561	Social Work Practice II	4
SOCWK 568	Social Work Practice III	3

Research content

STAT 330	Elementary Statistics for the Social Sciences	3
SOCWK 519	Methods of Social Work Research	4
SOCWK 550	Field Practicum Research Preparation	1

Social policy content

SOCWK 510	Social Welfare as a Social Institution	3
SOCWK 565	Program and Policy Formulation and Analysis	3

Field practicum

SOCWK 562	Field Experience	12

Professional social work seminar

SOCWK 564	Social Work Professional Seminar	3

Sociology courses

SOCIO 211. Introduction to Sociology. (3) I, II, S. Development, structure, and functioning of human groups; social and cultural patterns; and the principal social processes.

SOCIO 214. Introduction to Sociology, Honors. (4) I, II. Development, structure, and functioning of human groups; societal and cultural patterns; the nature of sociological inquiry. Lecture, discussion, and independent study.

SOCIO 301. Topics in Sociology. (Var.) I, II, S. Supervised independent and/or interdisciplinary study projects. Pr.: SOCIO 211 and consent of instructor.

SOCIO 360. Social Problems. (3) I, II. Analysis of social problems such as drug use, crime, juvenile delinquency, mental illness, unemployment, and family instability. Pr.: SOCIO 211.

SOCIO 361. Sociology of the Criminal Justice System. (3) II. General introduction to the field, examining all agencies and organizations that collectively make up the criminal justice system. Pr.: SOCIO 211.

SOCIO 362. Police and Society. (3) I. Examines in detail the policing function in society and the role police play in the criminal justice process. Pr.: SOCIO 211.

◆SOCIO 399. Honors Seminar in Sociology. (1–3) On sufficient demand. Readings and discussion of selected topics. Open to nonmajors in the honors program.

SOCIO 432. Community Organization and Leadership. (3) I, II. The analysis of community organization and change in American communities, with special emphasis on nonmetropolitan places. Issues include the analysis of internal community organizational ties, the interaction between the local community and its external environment, and the exploration of various methods affecting community development and social change within communities. Pr.: SOCIO 211.

SOCIO 435. Sport and Contemporary Society. (3) II. An analysis of sport and its role in contemporary society. Course creates a greater awareness of the social significance of sport in society and fosters the capacity to use critical thinking in the analysis of significant sport issues. Same as KIN 435. Pr.: SOCIO 211.

SOCIO 440. Social Organization. (3) II. Principles and processes of the organization and structure of human societies. Analysis of social groups and institutions and theories of social structure. Pr.: SOCIO 211.

SOCIO 450. Introduction to Social Interaction. (3) I. A survey of theories of social interaction and social psychology with special attention to research on principles of interpersonal relations in social situations, group formation, maintenance, and change. Pr.: SOCIO 211.

SOCIO 460. Juvenile Delinquency. (3) I, II, S. Nature, extent, and causes of delinquency; characteristics of delinquents; means of prevention and treatment. Pr.: SOCIO 211.

SOCIO 499. Senior Honors Thesis. (2) On sufficient demand. Open only to seniors in the arts and sciences honors program.

SOCIO 500. Sociological Perspectives on Contemporary Issues. (Var.) I, II, S. Analysis of a selected topic of contemporary interest. Topics vary from semester to semester and might include: impact of public policy on rural life; white collar crime; student-athlete education; social change in the Third World. Pr.: SOCIO 211.

SOCIO 501. Proficiency Development. (1–3) Integrative review of sociological concepts and skills under faculty supervision. For single students or groups of students. Not applicable to major field requirements. Not repeatable. For undergraduate credit only. Pr.: Consent of instructor and superior performance in relevant course.

SOCIO 504. Political Sociology. (3) II, in even years. An introduction to the principles of political sociology. Processes of political socialization, participation within and outside established organizational channels, recruitment of elites, communication and influence, power, decision making, and policy outputs. Data are presented from a cross-national perspective. Same as POLSC 504. Pr.: SOCIO 211, POLSC 110.

SOCIO 505. Introduction to the Civilizations of South Asia I. (3) I. Interdisciplinary survey of the development of civilizations in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan; geographical and demographic context; philosophical and social concepts; social and political institutions; literature; and historical movements. Same as HIST 505, ECON 505, POLSC 505, ANTH 505, GEOG 505. Pr.: SOCIO 211.

SOCIO 506. Introduction to the Civilizations of South Asia II. (3) II. Interdisciplinary survey of recent and contemporary civilizations in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including literature, geography, social and political structure, ideas. Same as HIST 506, ECON 506, POLSC 506, ANTH 506, GEOG 506. Pr.: SOCIO 211.

SOCIO 507. Political Sociology of Latin America. (3) I. A survey of the socioeconomic and political dimensions of Latin America's development in the twentieth century. Given the diversity that characterizes the region, the course adopts a comparative perspective, focusing on the experiences of particular countries in order to examine the most significant trends on the continent. Special attention is given to contemporary issues such as the process of transition to democracy; the impact of the foreign debt crisis, privatization, and free market policies. Pr.: SOCIO 211.

SOCIO 510. Social Welfare as a Social Institution. (3) I, II. The development and present status of social welfare in meeting changing human needs and the requirements in other parts of our social system; the analysis of present-day philosophy and functions of social welfare. Same as SOCWK 510. Pr.: SOCIO 211.

SOCIO 511. Comparative Social Theories. (3) I, II. Investigations of a range of current sociological theories concerning the socialization process, group behavior, and social organization. Pr.: SOCIO 211.

SOCIO 520. Methods of Social Research I. (4) I, II. Treatment of the logic and procedures involved in the formulation of a research problem and the difficulties encountered in conducting research. Examines problems of explanation and prediction, the process of inquiry, elements of the scientific method, the design of research, and analysis in the social sciences. Pr.: SOCIO 211, STAT 330 or equiv. To include 1 credit hour of lab and field research experience.

SOCIO 522. Sociological Field Methods. (3) I, II. Introduction to field/qualitative methods. Includes collection and analysis of data using techniques such as interviewing, observation, and unobtrusive measures. Taking field notes, report writing, and ethical issues are also stressed. Pr.: SOCIO 520.

SOCIO 531. Urban Sociology. (3) II. Growth, development, and structure of the city as explained by social, economic, and political factors; social groups (e.g. race/ethnic groups, social classes) in cities; urban problems and various approaches to their solution. Pr.: SOCIO 211.

◆SOCIO 533. Rural Sociology. (3) I. Social change and social structure of rural regions and rural communities. Change in agriculture structure, rural demographic shifts, changes in economic base of rural communities in the United States and elsewhere in relation to changing political economy of the world-system. Possible specific topics include rural community revitalization, women in agriculture, peasants, off-farm work, rural policy, food policy. Pr.: SOCIO 211 or consent of instructor.

SOCIO 535. Population Dynamics. (3) II, in odd years. World population trends and their implications for economic development, public policy, and social and cultural change. The interaction of fertility, mortality, and migration with the size, distribution, and structure of populations in nations and world regions. Pr.: SOCIO 211.

SOCIO 536. Environmental Sociology. (3) II, in even years. The interrelations among human societies, social institutions, and the biophysical environment. Emphasis on the reciprocal links among technological change, economic structure, and the ecological basis of human societies. Pr.: SOCIO 211.

SOCIO 541. Wealth, Power, and Privilege. (3) II. Distribution of resources and rewards in American society. Various explanations of the causes, persistence, and effects of inequality in American life. Discussion of social mobility and current issues. Pr.: SOCIO 211.

SOCIO 542. The Social Organization of the Future. (3) On sufficient demand. Examination of alternative social arrangements presented in speculative and science fiction. Consideration of fictional extrapolations of social, scientific, and technological trends in terms of specific institutions. Analysis of possible social and interpersonal structures imaginatively conceived. Pr.: SOCIO 211.

SOCIO 545. The Sociology of Women. (3) II. The positions of women in the United States and cross-culturally are studied in order to understand what women and girls do and how that is perceived and responded to by different groups. Pr.: SOCIO 211.

SOCIO 546. Bureaucracy in Modern Societies. (3) I. The nature and types of bureaucratic organizations in modern societies. Selected aspects of their internal structure, such as peer group and hierarchical relations in organizations, processes of communication, management, and impersonal mechanisms of control. Pr.: SOCIO 211.

SOCIO 561. Criminology. (3) I, II. Theoretical foundations of research on the nature, extent, and causes of crime; programs for prevention and treatment. Pr.: SOCIO 361 or 511.

SOCIO 565. Program and Policy Formulation and Analysis. (3) I, II. Examination of policies and programs developed to cope with various social problems. Emphasis will be on analysis of existing programs and policies and the formulation of alternative policies. Attention will be given to policy change through legislative action. Same as SOCWK 565. Pr.: SOCIO 510.

SOCIO 567. Pre-Internship Orientation. (1) I, II. This course prepares students for internship placements. Resumes are written, interview procedures discussed, agency interviews conducted, internships selected, and agency orientation completed. Pr.: SOCIO 520

SOCIO 568. Criminology and Sociology Internship. (6–9) I, II, S. Supervised field experience in various agencies within the criminal justice system or other public or private organizations in areas involving applied sociological analysis or practice. Criminology majors wishing to pursue careers in the field of criminal justice are strongly encouraged to complete an internship. General sociology students may take this course under the direction of a faculty member who agrees to serve as their internship advisor. Does not fulfill sociology or criminology elective requirements. Must be taken concurrently with SOCIO 569. Pr.: SOCIO 567.

SOCIO 569. Criminology and Sociology Professional Seminar. (3) I, II, S. Integrates field experience and everyday practices with relevant bodies of sociological and criminological theory and research. Must be taken concurrently with SOCIO 568. Pr.: SOCIO 567.

SOCIO 570. Race and Ethnic Relations in the U.S.A. (3) I, II. This survey of racial and ethnic relations focuses on discrimination and conflict now as well as on background factors of the past to enlarge understanding of dominant and minority groups. Pr.: SOCIO 211.

SOCIO 580. Corrections. (3) I, II. The historical development and current status of the correctional system. Major institutional components: jails, prisons, probation, parole and other forms of community corrections. Modern issues such as offender and victim rights and electronic monitoring. Pr.: SOCIO 561.

SOCIO 618. Religion in Culture. (3) II, in odd years. The nature of religion and its manifestations in different cultural systems. Same as ANTH 618. Pr.: ANTH 200 or SOCIO 211.

SOCIO 633. Gender, Power, and International Development. (3) On sufficient demand. Examination of various models of development and their impact on various roles of women and men in various cultures. Emphasis upon Africa, Asia, and Latin America. Comparisons of public, service, and economic sectors, including agriculture, marketing, and industry. Examination of policy issues. Pr.: SOCIO 211 or ANTH 200 or ANTH 204 or ANTH 210 and 3 additional hours in sociology or cultural anthropology. Same as ANTH 633.

SOCIO 635. The Socioeconomic and Environmental Impacts of NAFTA. (3) Intersession only. The course examines the economic and social restructuring of North America now underway via continental integration, placing this process in its historical context and exmaining the sectorally and geographically specific impacts of this process precipitated by the North American Free Trade Agreement.

SOCIO 640. Sociology of the Family. (3) I. Origin and development of marriage customs and systems of family organizations; the preparation for family life under present conditions. Pr.: SOCIO 211.

SOCIO 643. Sociology of Religion. (3) I. On sufficient demand. The role of religion as an institution in American society. An assessment of the functions of religion and an exploration of contemporary trends and movements, including information on traditional denominations and emerging sects and cults. Pr.: SOCIO 211.

SOCIO 647. Sociology of Work. (3) II. The social nature of work and related phenomena; occupational structures; career lines; adjustment and interpersonal relations at work; significance of work in the life cycle. Pr.: SOCIO 211.

◆**SOCIO 665. Women and Crime.** (3) I, in odd years. Nature, extent, and causes of crime among women; victimization of women including domestic assault, rape and incest; women who work in the criminal justice system. Pr.: SOCIO 361 or junior standing.

SOCIO 701. Problems in Sociology. (Var.) I, II, S. Pr.: SOCIO 211 and junior standing.

SOCIO 709. Development of Social Thought. (3) On sufficient demand. Development of social thought from ancient civilization to the middle of the nineteenth century; approaches to the study of society; ideas on human origins and human nature, character and results of associative life, social trends, and social betterment. Pr.: SOCIO 211.

SOCIO 710. Systematic Analysis of Social Theory. (3) I. Examination of sociological theory with reference to the nature of scientific explanation and the function of scientific theory. Critical study and analysis of selected social theory and major social theorists with the objective of clarifying the conceptual and logical structure of underlying theoretical models and their assumptions about man and society. Pr.: SOCIO 511 or equiv.

SOCIO 738. Inter-American Migration. (3) I, in odd years. Analyzes the migratory experiences of Latin American and Caribbean peoples to the United States within their socioeconomic, cultural, political and historical contexts. Introduces students to the current theoretical debate on migration and the construction of U.S. immigration policies. Examines the ways in which these policies shape migrant flows to the U.S., the incorporation and community formation of immigrants, and the impacts of such communities on the development of U.S. society. Pr.: SOCIO 535 or consent of instructor.

SOCIO 742. Society and Change in South Asia. (3) II, in even years. Examines recent studies of family and community, population, mobility, urbanization, and modernization in the India-Pakistan region, with focus on social change. Pr.: SOCIO 211 or ANTH 200 and either a 500-level course in South Asian studies or one in social change and development.

SOCIO 744. Social Gerontology: An Introduction to the Sociology of Aging. (3) II. Analysis of the phenomenon of human aging in its individual, social, and cultural aspects with special attention to the problems of aging populations in Western societies. Pr.: SOCIO 211.

SOCIO 861. Sociology of Deviance. (3) I, in odd years. A critical examination of the nature, types, and societal reactions to deviant behavior. Special emphases will be given to the process of stigmatization, the social construction of social problems, and the effects of inequalities such as race, gender, class, and sexuality on the process of creating and applying deviant labels to individuals and groups. Pr.: Graduate standing.

Anthropology courses

ANTH 200. Introduction to Cultural Anthropology. (3) I, II S. Introduction to ethnology and ethnography; analysis and comparison of technological, social, and religious characteristics of cultural systems. Not available for credit to students who have credit in ANTH 204.

◆**ANTH 204. A General Education Introduction to Cultural Anthropology.** (3) I, II, S. Introduction to ethnology and ethnography; analysis and comparison of technological, social, and religious characteristics of cultural systems. Not available for credit to students who have credit in ANTH 200.

ANTH 210. Introduction to Cultural Anthropology, Honors. (4) On sufficient demand. Introduction to basic ethnology and ethnography; technological, social, and religious characteristics of cultural systems; discussion and independent study.

ANTH 220. Introduction to Linguistic Anthropology. (3) II. Language as a part of human behavior: its origins, uses and abuses, and ways of defining reality. Basic descriptive and ethnosemantic skills used by anthropologists to learn languages in the field.

ANTH 260. Introduction to Archaeology. (3) I, II. A brief survey of theories of culture change as they apply to the development of Stone Age cultures through the rise of worldwide agricultural societies, cities, and other complex societies; brief outlines of the major Old and New World cultural sequences.

ANTH 280. Introduction to Physical Anthropology. (3) I, II (odd years only). History of research; principles of evolution and human genetics; primate relations of hominids; fossil evidence of the evolution of hominids; the study of modern race; culture and evolution.

ANTH 281. Introduction to Physical Anthropology Laboratory. (1) I, II (odd years only). Laboratory investigation of human skeletal anatomy, human genetics, primate comparative anatomy, fossil hominid morphology, and comparative evolution of hominid types. Two hours lab a week. Pr.: ANTH 280 or conc. enrollment.

◆**ANTH 399. Honors Seminar in Anthropology.** (1–3) On sufficient demand. Readings and discussion of selected topics. Open to nonmajors in the honors program.

ANTH 420. Ethnography of Language. (3) I or II. Study of language and dialect as aspects of social and ethnic group identities. Participant observation is emphasized. Research project includes kinship terminology, life histories, folklore, and lexicography. Pr.: ANTH 200 or 204 or 210 or consent of instructor.

ANTH 499. Senior Honors Thesis. (2) On sufficient demand. Open only to seniors in the arts and sciences honors program.

ANTH 501. Proficiency Development. (0–3) I, II. Integrative review of anthropological concepts and skills under faculty supervision. For single students or groups of students. Not applicable to major field requirements. Not repeatable. For undergraduate credit only. Pr.: Consent of instructor and superior performance in relevant course.

ANTH 505. Introduction to the Civilizations of South Asia I. (3) I. Interdisciplinary survey of the development of civilizations in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan; geographical and demographic context; philosophical and social concepts; social and political institutions; literature and historical movements. Pr.: ANTH 200 or 204 or 210. Same as HIST 505, ECON 505, POLSC 505, SOCIO 505.

ANTH 506. Introduction to the Civilizations of South Asia II. (3) II. Interdisciplinary survey of recent and contemporary civilizations in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including recent history, current economy, religion, culture, languages, literature, geography, social and political structure, ideas. Pr.: ANTH 200, 204, or 210. Same as HIST 506, ECON 506, POLSC 506, SOCIO 506.

ANTH 508. Male and Female: Cross-Cultural Perspectives. (3) I or II. Gender roles and male-female relationships in the world's cultures. Stresses gender-role complementarity within the anthropological framework of cultural relativism. Pr.: ANTH 200, 204, or 210.

ANTH 510. Kinship and Marriage in Cross-Cultural Perspective. (3) II. Systems of family, marriage, descent, and sex tabus in cross-cultural perspective. Pr.: ANTH 200 or 204 or 210, or SOCIO 211.

ANTH 511. Cultural Ecology and Economy. (3) I or II. Cultural ecology and organization in the world's cultures. Discussion of environment and culture, exchange and display, money, trade and markets, and economic development and social change in selected societies. Pr.: Sophomore standing.

ANTH 512. Political Anthropology. (3) I or II. Ethnological approaches to politics in societies around the world. Structural-functional, evolutionary, and conflict theories. A comparison of the political systems of small-scale and complex societies: political modernization. Pr.: Sophomore standing.

ANTH 515. Creativity and Culture. (3) I, in even years. How ethnologists view the expressive and creative aspects of culture. A cross-cultural survey of the verbal, visual, and performing arts. Pr.: ANTH 200, 204, or 210.

ANTH 516. Ethnomusicology. (3) I, in odd years. Ethnic, popular, and traditional musics from around the world. The course samples a wide range of stylistic traditions from Africa, Asia, Oceania, Europe, and the Americas. Emphasis is on understanding musical style in cultural context. Pr.: ANTH 200, 204, or 210.

ANTH 517. African American Music and Culture. (3) II, in even years. Continuity and tradition in the musical styles and cultural patterns of African Americans in the United States, the Caribbean, and South America. Music, art, religion, social organization, from African roots to modern forms. Pr.: ANTH 200, 204, or 210.

ANTH 519. Applied Anthropology. (3) I or II. Application of anthropological principles and insights to programs of planned change, cultural innovation, and contemporary problems. Pr.: ANTH 200, 204, or 210.

ANTH 520. Research Seminar. (Var.) On sufficient demand. Intensive exploration of anthropological problems for both majors and nonmajors of sufficient background. High levels of individual participation. Pr.: 9 hours of anthropology.

ANTH 522. Special Topics in Anthropology. (1–4) On sufficient demand. Variable topics within cultural anthropology, linguistic anthropology, archaeology, or physical anthropology. Pr.: Consent of instructor.

ANTH 524. Immigrant America. (3) I. Discussion of post-1965 immigration to the United States with a focus on Asian and Latino newcomers. Immigrant adaptation, economic strategies and the reinterpretation of cultural identity. Implications for American society. Pr.: ANTH 200, 204, or 210.

ANTH 533. Indians of Kansas. (3) On sufficient demand. Description and comparison of native cultures of the prairies and plains of Kansas. Culture contact and change in surviving tribes. Pr.: ANTH 260.

ANTH 536. African American Cultures. (3) On sufficient demand. Description and comparison of African-derived cultural patterns in the Americas, stressing culture contact and acculturation, retention and syncretism, social and economic organization, religion, language, the arts. Pr.: ANTH 200, 204, or 210.

ANTH 545. Cultures of India and Pakistan. (3) On sufficient demand. Cultural survey of the contemporary tribes and Hindu caste communities in their historical and geographical context, followed by a more intense analysis of selected Indian and Pakistani village case studies stressing indigenous economic, social, political, and religious structures. Pr.: ANTH 200, 204, or 210.

ANTH 550. Cultures of Africa. (3) On sufficient demand. Family life, subsistence patterns, exchange systems, languages, religions, and development of the peoples of Africa. Pr.: ANTH 200, 204, or 210

ANTH 570. North American Indian Archaeology. (3) I or II. The peopling of the New World; the Archaic period; spread of agriculture; prehistoric village community life. Specific cultural sequences of the U.S. and Arctic. Pr.: ANTH 260.

ANTH 602. Anthropological Theory. (3) I or II. Review and integration of the major theoretical approaches in the principal branches of anthropology. Pr.: ANTH 200, 204, or 210.

ANTH 604. Culture and Personality. (3) I or II. Anthropological contributions to personality study; cross-cultural comparisons of personality types, means of personality formation in different cultures; cultural change and personality. Pr.: Three hours of anthropology.

ANTH 618. Religion in Culture. (3) I. The nature of religion in different cultural systems. Pr.: ANTH 200, 204, or 210 or SOCIO 211 or consent of instructor. Same as SOCIO 618.

ANTH 625. Independent Reading and Research in Anthropology. (1-3) I, II. Guided reading and research on a specific anthropological topic of student interest, leading to preparation of a research paper. Topic and credit to be arranged. Pr.: Three hours of anthropology and consent of instructor.

ANTH 626. Internship in Museology. (3) I, II, S. Practical professional museum experience of at least four weeks full time or 150 hours part time in the processing of collections, conservation, cataloging, archive and library maintenance, and/or the planning and preparation of exhibits. Open to anthropology majors only. May be repeated once for credit if at a different type of museum. Pr.: ANTH 200, 204, 210, 260, or 280.

ANTH 630. Indigenous Peoples and Cultures of North America. (3) II. Description and comparison of native cultures of Canada and the United States; culture contact and change among surviving groups. Pr.: ANTH 200, 204, 210, or 260.

ANTH 633. Gender, Power, and International Development. (3) On sufficient demand. Examination of various models of development and their impact on various roles of women and men in various cultures. Emphasis upon Africa, Asia, and Latin America. Comparisons of public, service, and economic sectors, including agriculture, marketing, and industry. Examination of policy issues. Pr.: SOCIO 211 or ANTH 200 or 204 or 210 and 3 additional hours in sociology or cultural anthropology. Same as SOCIO 633.

ANTH 634. Indigenous Peoples and Cultures of Latin America. (3) On sufficient demand. A survey of the nature and variability of the original cultures of Latin America. Analysis of sample cultures, stressing economic, social, political, and religious structures. Pr.: ANTH 200, 204, 210, or 260.

ANTH 641. Internship in Applied Anthropology. (3) I, II, S. Supervised field experience of at least three weeks full time or 150 hours part time with an organization or institution in the application of anthropological approaches to problem solving and working in a professional setting. Emphasis is on anthropological skills in relation to the objectives and operations of an institution. Open to anthropology majors only. May be repeated once for credit. Pr.: ANTH 519 and junior standing and consent of program coordinator.

ANTH 673. Mesoamerican Archaeology. (3) II, in odd years. Early foraging societies, the beginnings of agriculture; the rise of civilization; the classic empires of the Maya, Aztec, Tarascans, and their neighbors; relationships with the United States. Pr.: ANTH 260.

ANTH 676. Old World Archaeology. (3) II, in even years. Origin and evolution of human culture and technology with a particular focus on the cultural developments in China, India, sub-Saharan Africa, and Polynesia as well as the Bronze and Iron Ages of Europe and the early Mediterranean civilizations. Pr.: ANTH 260, 204, 210, or 280.

ANTH 679. Archaeological Field Methods. (3) I. Archaeological site survey, site excavation, and laboratory analysis of sites and artifacts from the Manhattan, Kansas region. Field work on Saturday, 8 a.m.–5 p.m., while weather permits, laboratory work thereafter. Pr.: Consent of instructor.

ANTH 680. Survey of Forensic Sciences. (3) I, in odd years. Anthropological survey of the predominantly biological areas of forensic science, their methods and techniques, as they pertain to the application of that science to the purpose of the law. Particular emphasis will be given to perspectives about the science itself, its application to anthropology, and the unique ways in which that science may be used by the law. Pr.: A life science with laboratory requirement in the College of Arts and Sciences or consent of the instructor.

ANTH 685. Race and Culture. (3) On demand. The biological meaning of race; the interrelationships of biological and cultural traits in human evolution; processes of racial formation of man; methods of classifying human races; cultural inheritance; the distinction of race, culture, personality, and intelligence; a review of modern racism; race as an evolutionary episode. Pr.: ANTH 200, 204, 210, or 280.

ANTH 688. Paleoanthropology. (3) II, in odd years. Human origins and evolution as indicated by fossil evidence; interpretation of man-apes, Pithecanthropus, Neanderthal, Cro-Magnon, and other major fossil groups within the context of evolutionary theory, primate comparisons, and cultural evolution. Pr.: ANTH 200 or 280 or consent of instructor.

ANTH 691. Primatology. (3) I, in even years. Survey of the primate order including considerations of evolution, morphology, and behavior. Particular emphasis will be given to developing perspectives about the origin and evolution of hominids in the context of the primate order. Pr.: ANTH 280 or consent of instructor.

ANTH 694. Osteology. (3) II, in even years. Detailed study of human skeleton, with special attention to health and demographic conditions in prehistoric cultures and the evaluation of physical characteristics and genetic relationships of prehistoric populations. Pr.: ANTH 280 or consent of instructor.

ANTH 695. Laboratory in Osteology. (1) II, in even years. Laboratory demonstration and exercise in working with skeletal material for analysis of sex, age, stature, and race. Complete metric and nonmetric analysis with consideration given to paleodemography, paleopathology, in situ analysis and excavation, and preservation. Written reports on bone material remains will be necessary. Pr.: ANTH 694 or conc. enrollment.

ANTH 697. Seminar in Osteology. (2) II, in odd years and on demand. Analysis of human and nonhuman skeletal remains including age, sex, stature, race, anomalities, pathologies, trauma, metric and nonmetric traits, cause of death, and time since death. This course allows greater breadth and depth of osteological analysis than either ANTH 694 or 695, and allows for more concentration on individual methods and techniques and case studies. Pr.: ANTH 694 and 695.

ANTH 730. Field and Laboratory Techniques in Archaeology. (1–9) S. Participation in archaeological excavations; techniques, methods, and procedures in a field research situation. The laboratory work of cleaning, cataloging, analyzing, and preliminary report preparation of materials recovered. May be repeated once if the areas or problems involved are different. Pr.: ANTH 200 or 260 or consent of instructor.

ANTH 792. Field Methods in Linguistics. (3) On sufficient demand. Techniques of collecting and analyzing linguistic data in the field. Work with language consultants in class, on languages such as Swahili. Pr.: ANTH 220 or LING 280 or 600. Same as LING 792 and LG 792.

Social work courses

SOCWK 010. Introduction to the Social Work Major. (0) I, II. Information for new social work majors on the requirements, content, and objectives of the course sequences, and on the formal admissions process; and emphasizes the importance of the liberal arts foundation as the basis for the professional content; and reviews the CSWE Curriculum Policy Statement plus the NASW Code of Ethics.

SOCWK 260. Introduction to Social Work. (3) I, II. An introduction to the profession of social work and the various fields of social service by observing, experiencing, and analyzing social work and its place in society. An opportunity for the student to test social work as a possible career choice. Restricted to freshmen, sophomores, first-semester transfer students and social work majors.

SOCWK 310. Topics in Social Work. (1–3) I, II. Supervised independent study projects. Pr.: Consent of the instructor.

SOCWK 499. Senior Honors Thesis. (2) On sufficient demand. Open only to seniors in the arts and sciences honors program.

SOCWK 501. Proficiency Development. (1–3) Integrative review of social work concepts and skills under faculty supervision. For single students or groups of students. Not applicable to major field requirements. Not repeatable. Pr.: Consent of instructor and superior performance in relevant course.

SOCWK 510. Social Welfare as a Social Institution. (3) I, II. The development and present status of social welfare in meeting changing human needs and the requirements in other parts of our social system; the analysis of present-day philosophy and the functions of social welfare. Same as SOCIO 510. Pr.: One course in each of the following areas: sociology, economics, and political science.

SOCWK 515 Human Behavior in the Social Environment. (3) I, II. An introduction to the relationship among biological, social, psychological, and cultural systems as they affect or are affected by human behavior as it relates to social world models of practice. Emphasis on social systems understanding of human development. Pr.: FSHS 110, SOCWK 260, BIOL 198, PSYCH 110, SOCIO 211, and ANTH 200.

SOCWK 519. Methods of Social Work Research. (4) I, II. Focus is on research application in area of baccalaureate social work practice. Particular attention is given to research strategies for the evaluation of social work practice, for gathering information about communities and clientele, and for examining the impact of social policies at the local level. The content examines the ethics and processes of research, including the issues of research problem identification and selection, the use of the library to support the research effort, design considerations, problems of analysis with small samples, and presentation of research findings. Includes 1 credit hour of lab and field experience. Pr.: STAT 330 and SOCWK 260. Social work majors only. Must be taken conc. with SOCWK 560.

SOCWK 543. Women's Mental Health Issues. (3) II. Investigates prevalent women's mental health issues such as the incidence of depression/anxiety, eating disorders, sexuality, relationship concerns. Also covers the efficacy of traditional treatment modalities and newer therapies that target women's unique mental health needs, such as feminist or nonsexist therapies. Pr.: One course in women's studies, social work, psychology, or family therapy.

SOCWK 550. Field Practicum Research Preparation. (1) I, II. Social work majors take this course in the semester before enrollment in SOCWK 562 Field Experience. The student is expected to prepare a research proposal which describes research that will be completed in the field practicum setting. In addition, the student is expected to complete 50 hours of volunteer time in the assigned field practicum setting. Pr.: SOCWK 519 and senior standing. Social work majors only.

SOCWK 560. Social Work Practice I. (4) I, II. Introduction to the basic helping skills and techniques common to social work practice. The social systems perspective is used to guide the development of a problem-solving methodology with attention to information gathering, assessment, and problem identification. Values clarification and self-awareness are emphasized and the skills needed for intervention, termination, and evaluation are introduced. Pr.: SOCWK 260, 510, and 515; junior standing and permission of the instructor. Must be taken conc. with SOCWK 519.

SOCWK 561. Social Work Practice II. (4) I, II. Continuation of SOCWK 560 with emphasis on skill development in intervention techniques, and practice evaluation from a social systems perspective. A variety of intervention strategies and techniques is presented with emphasis on the development of a social work frame of reference. Pr.: SOCWK 560 and senior standing and permission of the instructor.

SOCWK 562. Field Experience. (12) II, S. Supervised field experience in community agencies and programs as a practical application of social work knowledge and skills gained from major course work. Emphasis on direct work with clients, whether individuals, groups, or communities. Seminars make use of student's experiences to analyze social work theory and practice. Pr.: SOCWK 515, 550, 561; senior standing; social work majors only; permission of the instructor.

SOCWK 563. The Practice of Social Work in Rural Areas. (3) On sufficient demand. A review of characteristics and social problems of rural areas. The development of practice competency in social work roles and skills necessary for rural practice. Pr.: SOCWK 560.

SOCWK 564. Social Work Professional Seminar. (3) II, S. A review of various theories in the behavioral sciences which influence the practice of social work. Primary focus of the course is on the use of these theories in implementing change in various client systems. Pr.: To be taken conc. with SOCWK 562. Social work majors only.

SOCWK 565. Program and Policy Formulation and Analysis. (3) I, II. Examination of policies and programs developed to cope with various social problems. Emphasis will be placed on analysis of existing programs and policies and the formulation of alternative policies. Attention will be given to policy change through organizational and legislative action. Same as SOCIO 565. Pr.: SOCWK 510; one course in each of the following areas: sociology, economics, and political science; and one course in social science research methods.

SOCWK 566. Social Work in Aging Services. (3) Social work practice course focusing attention on working with institutionalized and noninstitutionalized elderly. Role of the social worker is explored in the context of physical, psychological, social, and economic aspects of aging. Skills in working with elderly are emphasized through classroom and direct practice in social work or in gerontology. Pr.: Three course hours in social work or gerontology.

SOCWK 568. Social Work Practice III. (2) I, II. Continuation of social work practice sequence with focus on skills development for macro-level social work practice. Community and organization intervention strategies are presented with emphasis on the development of a social work frame of reference. Taken conc. with SOCWK 561. Pr.: SOCWK 560; senior standing; open to social work majors only.

◆SOCWK 580. Women's Perspectives on Peace and War. (2–3) Intersession only. This course will consider the issue of the participation of women in opposition to war and weapons of war and advocacy for peaceful resolution of conflict. Readings and discussions will focus on four areas: (1) historical and contemporary women's peace movements; (2) the influence of a male-dominated societal structure on the use of violence and militarism as a means of resolving conflict; (3) the question of whether or not women are naturally more inclined to be peaceful; and (4) the activities, thoughts, and works of individual women in their quest for peace, within themselves, and in the world.

SOCWK 610. Topics in Social Work. (1–3) Supervised independent study projects. Pr.: SOCWK 260 plus 6 hours of behavioral science foundation courses and consent of instructor.

Speech Communication, Theatre, and Dance

David Procter,*Head

Professors Fedder* and Zivanovic;* Associate Professors K. Anderson,* Armagost,* Burtis,* Goulden,* Griffin,* Hinrichs,* MacFarland,* Maullar,* Procter,* Schenck–Hamlin,* Shelton,* and Uthoff; Assistant Professors Centers, Davis, Davy,* Orlock, Pinkston,* Pond,* Ross, and Yagerline; Instructors P. Anderson, Brown, Nichols, and Stanfield.

The Department of Speech Communication, Theatre, and Dance offers study in rhetoric/communication, linguistics, theatre, and dance.

All undergraduate majors require SCTD 100 plus 6 hours in other areas within the department. See speech secondary education requirements, College of Education, for teacher certification.

Rhetoric and communication

Rhetoric, one of the original liberal arts, is concerned with the theory, criticism, and practice of communication. The rhetoric/communication program has two instructional goals. First, the program attempts to improve a student's communication skills in developing messages that are clear, coherent, reasoned, and fluent. Course work in public speaking, group and interpersonal communication, and co-curricular activities in debate and forensics provide opportunities to acquire practical communication skills. Second, the program attempts to develop a student's ability to analyze communication in different social, political, and organizational settings. Course work in theory, history, and criticism focuses on the study of speech and language used to achieve practical ends. A major in rhetoric/communication would be appropriate for anyone who plans to enter a career that is communication-intensive, such as law, education, public relations, or government.

An undergraduate major in rhetoric/communication is required to take 35 hours of course work in the Department of Speech Communication, Theatre, and Dance, distributed as follows:

Rhetorical and communication theory 7

SPCH 080	Speech Seminar	0
SPCH 320	Theories of Human Communication	3
SPCH 330	Rhetoric of Western Thought	3
SPCH 550	Senior Colloquium	1

Guided electives 12

Choose two of the following courses in rhetoric:

SPCH 331	Criticism of Public Discourse	3
SPCH 432	Rhetoric of the American Presidency	3
SPCH 434	Rhetoric of Social Movements	3
SPCH 435	Political Communication	3
SPCH 460	Rhetoric of the 60's	3

Choose two of the following courses in communication:

SPCH 322	Interpersonal Communication	3
SPCH 323	Nonverbal Communication	3
SPCH 326	Small Group Discussion Methods	3
SPCH 526	Persuasion	3

Rhetoric/communication electives 9

Must be 300-level or above with at least 3 credit hours numbered 400 or above.

Other department courses 7

SCTD 100 1

2 courses in theatre, linguistics, or dance 6

Rhetoric/communication minor

The Department of Speech Communication, Theatre, and Dance offers a minor in rhetoric and communication.

SPCH 080	Speech Seminar	0
SPCH 320	Theory of Human Communication	3
SPCH 330	Rhetoric of Western Thought	3

Four guided electives (at least one SPCH 400 or above) chosen from: SPCH 311, 319, 321, 322, 323, 325, 326 328, 331, 425, 426, 430, 432, 434, 435, 450, 460, 520, 525, 526, 630, 720, 721, 725, 726, 730, 732, 733, 735) 12

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Linguistics

There is general agreement that nothing is more characteristically human than the ability to use language. Linguists, however, usually do not study languages in order to become proficient in speaking, reading, or writing them. In linguistics we are interested in discovering all the principles that, in a sense, define each language, how it works, how it has changed through time and geographical distribution, as well as how children learn to speak, and how people use language.

There are relationships between linguistics and many other disciplines (see Linguistics, in the general information for the College of Arts and Sciences). Students are encouraged to explore as many of these relationships as they can as undergraduates, especially if they anticipate going on to graduate study.

Theatre and dance

The mission of the theatre program is to develop human potential, expand knowledge, and enrich cultural understanding and expression through high quality undergraduate and graduate education. Through scholarship/research, service, and production, the theatre program seeks to train future artists, scholars and teachers of theatre, and to inform the non-major, the university at large, and the surrounding community of the value of theatre to individuals and society.

The major in theatre emphasizes the education of students for professional career goals or for cultural enrichment as an avocation. The objective of the program is to offer broad training, but also the possibility of specialization. Training is available in all areas of theatre, including scenery, costuming, theatre history and literature, acting, directing, playwriting, and dance. The goals of the program are to offer a liberal arts program in theatre; to prepare students for advanced professional training or graduate school; and to provide the basic theatre skills for the bachelor's candidate. K-State is an accredited institutional member of the National Association of Schools of Theater.

A major consists of 41 hours in theatre, SCTD 100 (1) and 6 hours in tool courses in other areas of the department. (The course used to satisfy the College of Arts and Sciences requirement of one course in public speaking may not be counted as part of these 6 hours.) The 41 hours in theatre must be distributed as follows:

Four semesters of Theatre Forum are also required.

A theatre core of 25 hours:

THTRE 080	Theatre Forum	0
THTRE 162	Concepts of Theatre Production	1
THTRE 261	Fundamentals of Acting	3
THTRE 267	Fundamentals of Stage Costuming and Makeup	3
THTRE 368	Fundamentals of Technical Production	3
THTRE 369	Introduction to Theatrical Design	3
THTRE 370	Dramatic Structure	3
THTRE 565	Principles of Directing	3
THTRE 572	History of Theatre I	3
THTRE 573	History of Theatre II	3

Twelve additional hours in theatre courses numbered 500 or above (excluding THTRE 566 and 710).

Four hours of production work distributed as follows: Two hours in THTRE 211 Drama Participation: One hour in conjunction with THTRE 368 Fundamentals of Technical Production; one hour with THTRE 267 Fundamentals of Stage Costuming and Makeup.

Two hours in THTRE 710 Practicum in Theatre, or in THTRE 566 Rehearsal Techniques, for work in a production.

There will be a written evaluation of all production work required for the major at the end of each semester.

Theatre minor

The Department of Speech Communication, Theatre, and Dance offers a minor in theatre.

THTRE 162	Concepts of Theatre Production	1
THTRE 261	Fundamentals of Acting	3

THTRE 369	Introduction to Theatrical Design	3
THTRE 370	Dramatic Structure	3
THTRE 572	Theatre History 1	3
	or	
THTRE 573	Theatre History 2	
6 credit hours of electives: *(See note below)		6
		19

**Excluded* from counting toward electives are: THTRE 165, 211, 566, 710

Concentration in dance

A concentration in dance requires the following:

Core

DANCE 195	Improvisational Structures	2
DANCE 200	Anatomy for Dancers	1
DANCE 205	Dance as an Art Form	3
DANCE 225	Principles of Rhythmic Notation	2
DANCE 295	Dance Composition I	3
DANCE 321	Variations and Partnering	1
DANCE 380	Musical Stage Dance	2
DANCE 405	Applied Movement Fundamentals	3
DANCE 420	Dance/Theatre Lab (required each semester)	0
DANCE 495	Dance Composition II	3
DANCE 502	Performance Production (minimum of 3 semesters)	1–2
DANCE 504	Performance Aesthetics	3
DANCE 505	Methods and Materials of Teaching Dance	2
DANCE 506	Dance Education Fieldwork	1
DANCE 510	Senior Project	2
DANCE 520	Principles of Dance Technology	3
THTRE 261	Fundamentals of Acting	3
THTRE 211	Drama Participation (with THTRE 267 and 368)	2
THTRE 267	Fundamentals of Stage Costume Design	3
THTRE 368	Fundamentals of Technical Production	3

Elective

Choose one

ART 100	Design I	2
ART 190	Drawing I	2
HIST 459	History of Dance in Its Cultural Setting	3
KIN 455	Movement Exploration and Creative Dance for Children	3
		43–45

Dance technique

Proficiency must be demonstrated by successful completion with a minimum grade of B of Level III in one technique and Level II in another. Enrollment in a minimum of one technique course and DANCE 420 is required each semester.

Dance courses are listed after theatre courses.

Dance minor

The Department of Speech Communication, Theatre and Dance offers a minor in dance.

DANCE 205	Dance as an Art Form	3
DANCE 195	Improvisational Structures	2
DANCE 225	Principles of Rhythmic Notation	2
DANCE 295	Dance Composition I	3
DANCE 200	Anatomy for Dancers	1
DANCE 321	Variations and Partnering	1
DANCE 380	Musical Stage Dance	2
DANCE 420	Dance/Theatre Lab (4 semesters)	0
DANCE 502	Performance Production (minimum of three semesters)	1–2
Plus one of the following:		3
DANCE 405, 495, 504, (505 and 506) or 520		
		18–19

Dance technique

Proficiency must be demonstrated by successful completion with a minimum grade of B in Level III in one technique and Level II in another. Enrollment in a minimum of one technique course and DANCE 420 is required for 4 semesters.

Quiz-out

Students may earn 3 hours of credit for Public Speaking I by completing the quiz-out option with a grade of C or better. Students electing this option must (a) enroll in quiz-out as specified in the current schedule of classes; and (b) attend a mandatory informational meeting at the beginning of that semester.

Speech communication, theatre, and dance courses

SCTD 100. Introduction to Speech Communication, Theatre, and Dance. (1) I. An exploration of the disciplines and connections constituting the Department of Speech Communication, Theatre, and Dance.

Rhetoric and communication courses

SPCH 065. Spoken English for International Students. (3) I, II. Intensive practice in spoken American English for increased fluency and overall comprehensibility.

SPCH 080. Speech Seminar. (0) Special topics and lectures for speech majors. Required of all majors.

SPCH 090. Teaching Public Speaking I and IA. (0) Seminar for graduate teaching assistants in strategies, techniques, and materials for the introductory public speaking course; includes current practices and research in communication education. Enrollment limited to graduate teaching assistants in the Department of Speech.

SPCH 105. Public Speaking 1A. (2) I, II, S. Alternate to SPCH 106. Principles and practice of message preparation, audience analysis, presentational skills, and speech criticism. Primarily granted for students whose curricula require a 2-credit hour course. Credit not granted for both SPCH 105 and 106.

SPCH 106. Public Speaking I. (3) I, II, S. Principles and practice of message preparation, audience analysis, presentational skills, and speech criticism permitting greater practice in oral presentation. Credit not granted for both SPCH 105 and 106.

SPCH 109. Public Speaking 1A, Honors. (3) Honors speech preparation and delivery; a survey of topics basic to rhetoric, communication, and linguistics. For arts and sciences honors students.

SPCH 210. Forensics Participation. (1–2) I, II. Intercollegiate debate or individual events. Four hours maximum credit. Pr.: Consent of director of the activity.

◆SPCH 311. Business and Professional Speaking. (3) I, II. Principles and practice of speaking in an organizational setting. Areas of emphasis will be oral reports, interviewing, interpersonal communication, and working in groups. Pr.: SPCH 105 or 106.

SPCH 319. Intercollegiate Forensics. (3) I. Current practices and theories for competitive intercollegiate forensics activity. Pr.: Consent of director of the activity. May not be taken concurrently with SPCH 210.

SPCH 320. Theories of Human Communication. (3) I. Survey of basic theories of human communication focusing on sending, receiving, and responding to messages face-to-face. Pr.: SPCH 105 or 106.

◆SPCH 321. Public Speaking II. (3) I, II. Advanced principles and practice of speech composition, audience adaptation, and delivery. Pr.: SPCH 105 or SPCH 106.

SPCH 322. Interpersonal Communication. (3) I, II, S. Examination of the dynamics of face-to-face interpersonal interaction. Focus is on applying principles of relational communication.

SPCH 323. Nonverbal Communication. (3) II. Analysis of nonverbal communication in human interaction; theory and research in kinesics, proxemics, and paralinguistics. Pr.: SPCH 105 or 106.

◆SPCH 325. Argumentation and Debate. (3) II. Basic theories of argumentation with emphasis on the construction and criticism of will reasoned and supported positions. Pr.: SPCH 105 or 106.

◆SPCH 326. Small Group Discussion Methods. (3) I, II, S. Basic concepts of small-group decision making. Projects emphasize participation in and analysis of communication in the small group. Pr.: SPCH 105 or 106.

SPCH 328. Professional Interviewing. (3) Investigation of interviewing as it occurs in a variety of situations, including journalistic, diagnostic, persuasive, and managerial. Emphasis on developing practical skills in planning, managing interviews, and interpreting data in the professional context. Pr.: SPCH 105 or 106.

SPCH 330. Rhetoric in Western Thought. (3) I. An introduction to the figures, concepts, and trends in the development of rhetorical theory from classical to modern times. Pr.: SPCH 105 or 106.

SPCH 331. Criticism of Public Discourse. (3) II. An examination of public influence based on study of historical and contemporary models of rhetorical criticism. The students' critical experiences will focus on a broad array of public discourse including political, social, and cultural messages.

◆SPCH 399. Sophomore Honors Seminar. (3) Open only to qualified students in the arts and sciences honors program.

SPCH 425. Theories of Organizational Communication. (3) II. Review the literature and develop research projects regarding basic variables of communication in organizational contexts. Pr.: SPCH 105 or 106.

SPCH 426. Coaching and Directing Speech Activities. (3) I. Current practices in coaching curricular and extracurricular speech activities with practical experience in the problems and procedures of directing a forensic program. Pr.: Six hours of general speech or theatre courses that are 200 level or above, SPCH 325, and THTRE 263.

SPCH 430. Freedom of Speech. (3) II. A study of communication and legal principles pertaining to freedom of expression, and an examination of their implications for competing interests such as public order, national security, morality, civil rights, and fairness.

SPCH 432. The Rhetoric of the American Presidency. (3) An examination of the American presidency from a rhetorical perspective, emphasizing the symbolic resources and duties of the office and those who hold it. Special attention paid to the public discourse of recent presidents during moments of national crisis. Pr.: SPCH 105 or 106.

SPCH 434. Rhetoric and Social Movements. (3) II. A study of the scope and functions of persuasive communication in contemporary social movements. Pr.: SPCH 105 or 106.

SPCH 435. Political Communication. (3) II. A study of political discourse. Attention is directed to theory that encompasses political discourse as it affects political behavior. Pr.: SPCH 105 or 106.

SPCH 450. Special Studies in Human Discourse. (Var.) A study of selected subjects in the analysis and practice of human communication. Repeatable with change in topic. Pr.: SPCH 105 or 106.

SPCH 460. Rhetoric of the Sixties. (3) I. Rhetorical interpretation of the social and political forces dominating the decade and an examination of the forms of persuasion which these forces brought to life. Emphasizes political leadership, pressures for social change, foreign policy, and transformation of the rhetorical environment. Pr.: SPCH 105 or 106.

SPCH 480. Intercultural Communication. (3) I. A study of the relationship between language and culture and its impact on human communication. Examines how language and culture differ among people and how differences are handled through the process of communication. Pr.: SPCH 105 or 106.

SPCH 498. Honors Tutorial in Speech. (1–3) I, II. Individual directed research and study of a topic in speech, normally as a preliminary to writing a senior honors thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the honors program of the College of Arts and Sciences, and permission of the instructor.

SPCH 505. The Rhetoric of Black Slave Narratives. (3) II. A study of the liberating function of metonic by which female slaves invented a voice to redefine their place in American society. Examines languages from the perspectives of race, gender, and the power and their impact on African-American female persona. Pr.: SPCH 105 or 106.

SPCH 525. Argumentation Theory. (3) II. An advanced study of prominent argumentation theorists including Chaim Perelman and Stephen Toulmin, with an in-depth examination of special topics concerning the philosophy, theory, and practice of argumentation. Pr.: SPCH 125.

◆SPCH 526. Persuasion. (3) II. The study of communication as persuasion; examination of contemporary approaches to persuasion.

SPCH 550. Senior Colloquium. (1) I, II. A demonstration of the mastery of vocabulary, theory, and the ability to make practical applications of the study of rhetoric and communication will be required of all senior rhetoric communication majors. Mastery will be demonstrated by writing a senior thesis and presenting the results of that thesis to the assembled rhetoric communication faculty and majors in a required colloquium.

SPCH 630. Special Topics in Rhetoric and Communication. (3) II. Intensive study of selected topics in communication and rhetoric. Repeatable with change in topic. Pr.: Junior standing and consent of instructor.

SPCH 710. Introduction to Communication Research Methods. (3) I. Introduction to descriptive and experimental methodologies in communication, including conceptualization and operationalization of communication concepts, strategies of research design, and logic of inquiry. Pr.: SPCH 320.

SPCH 720. Perspectives on Communication. (3) Analysis of current perspectives on the communication process. Materials cover assumptions, principles, implications, and selected research within each perspective. Pr.: SPCH 320.

SPCH 721. Language and Social Interaction. (3) II. Study of the epistemological, social, and behavioral functions of language in communication. Examination of the processes by which language functions to construct one's worldview and guide individual action. Pr.: SPCH 320 or LING 280 or ANTH 220; junior standing.

SPCH 722. Instructional Communication. (3) II. Study of theory and practice of communication in the classroom including both teacher and student communication. Topics include integration of modes of communication, language choices, power, humor, communication strategies for instruction, and impact of communication on learning. Same as EDCIP 722.

SPCH 725. History of American Public Address. (3) Study of American speakers, from the time of Jonathan Edwards to the present, including their training, speeches, and effectiveness. Pr.: Junior standing and consent of instructor.

SPCH 726. Seminar in Persuasion. (3) II, in odd years. Survey and analysis of advanced theory and experimental studies in persuasion. Pr.: Junior standing.

SPCH 730. Classical Rhetorical Theory. (3) Study of rhetorical theory and criticism from early Greek to Roman times. Pr.: SPCH 330 or graduate standing.

SPCH 731. Nineteenth Century Rhetorical Theory. (3) Study of the influences on and developments of rhetorical theory in nineteenth-century America as manifested in educational and public settings. Pr.: SPCH 730.

SPCH 732. Contemporary Rhetorical Theory. (3) II. Study of major European and American contributors to rhetorical theory in the twentieth century. Pr.: SPCH 730.

SPCH 733. Rhetorical Criticism. (3) II. Study of traditional and contemporary approaches to the analysis of public discourse. Pr.: SPCH 330.

SPCH 735. Leadership Communication. (3) II in alternate years. Review the literature and develop research projects regarding the communication processes by which people move from operating as individuals into groups with a sense of groupself and, further, into groups or organizations that require leadership. Pr.: SPCH 311 or 326, or 425.

SPCH 799. Problems in Speech. (Var.) Open to students in any speech area. Pr.: Junior standing and consent of instructor.

Linguistics courses

LING 280. Introduction to the Study of Language. (3) I, II. Survey of the scientific study of language. Contributions of linguistics to an understanding of the nature of language. Presupposes no previous knowledge of linguistics.

LING 594. Comanche Texts. (3) I or II, in alternate years. General introduction to Comanche grammatical and discourse systems and study of oral narratives: published and unpublished texts including coyote stories, adventure stories, personal recollections, etc. Some attention to pronunciation, but major emphasis on the development of a basic reading ability and understanding of the world portrayed in the narratives. Same as LG 594.

LING 595. Archeological Decipherment. (3) I or II, in alternate years. The art and science of four famous cases of decipherment: Mesopotamian cuneiform, Egyptian hieroglyphics, Creto-Mycenaean Linear B, and on-going work on the Maya script. Characteristics of successful decipherments and resultant increases in knowledge about the history of writing and the richness of various cultures of the past. Same as LG 595.

LING 600. Principles of Linguistics. (3) The scientific study of language, with examples from English, Spanish, French, German, and others. Overview of language origins, phonetics, phonology, syntax, semantics, language acquisition, dialects, language change, and writing systems. Same as ENGL 600 and LG 600.

LING 601. General Phonetics. (3) I or II, in alternate years. Description and classification of speech sounds according to point and manner of articulation. Transcription in the International Phonetic Association Alphabet. Includes sounds of English, French, Spanish, German, and others. Same as ENGL 601 and LG 601.

LING 602. Historical Linguistics. (3) I or II, in alternate years. Internal and comparative reconstruction of earlier forms of languages. Genetic relationships in language families, and various typological considerations. Includes French, Spanish, and others. Same as ENGL 602 and LG 602.

LING 603. Topics in Linguistics. (1–3) I or II, in alternate years. Seminar on a special topic in linguistics: decipherment of ancient writing systems, linguistics applied to the teaching of English or other languages, discourse analysis (especially of spoken texts), etc. Topic to be announced for semester in which offered. Repeatable for credit on a different topic. Same as ENGL 603 and LG 603.

LING 783. Phonology I. (3) Basic concepts of the theory of language sound systems with particular reference to English but including reference to other languages as well. Pr.: SPCH or ENGL 681 and SPCH, ENGL, or MLANG 780. Same as ENGL 783 and LG 783.

LING 785. Syntax I. (3) Basic concepts of syntactic theory, with particular reference to English but including reference to the grammatical systems of other languages as well. Pr.: ENGL 530 or SPCH, ENGL, or LG 780. Same as ENGL 785 and LG 785.

LING 792. Field Methods in Linguistics. (3) On sufficient demand. Techniques of collecting and analyzing linguistic data in the field. Work with language consultants in class, on languages such as Swahili. Pr.: Consent of the instructor. Same as LG 792 and ANTH 792.

LING 796. Theories of Grammar. (3) I, S. Comparative examination of the assumptions, aims, and procedures of four types of English grammar—the normative grammar of Robert Lowth, the historical grammar of Otto Jespersen, the structural grammar of Leonard Bloomfield, and the generative-transformational grammar of Noam Chomsky—and their application. Same as ENGL 796. Pr.: Junior standing, and ENGL 530 or LING 600.

Theatre courses

THTRE 080. Theatre Forum. (0) I, II. Special topics presentations for theatre majors. Four semesters required for all majors.

THTRE 162. Concepts of Theatre Production. (1) I. An orientation to the various areas of theatrical production in the rehearsal and performance process. Required of all majors in their first spring semester.

THTRE 165. Appreciation of Theatre. (2) Direct experience with live theatre through an investigation of theatrical materials, forms, and styles, and through attendance at the University theatrical productions.

THTRE 211. Drama Participation. (0–2) I, II. Work in theatrical productions. Four hours maximum credit. Pr.: Consent of director of activity.

THTRE 235. Introduction to the Art of Film. (3) Examination of the means of creating film art. Attention to techniques employed by successful directors, writers, and producers.

THTRE 253. Multicultural Storytelling. (2) Intersession only. Development of oral performance skills in storytelling, with emphasis on cultural/ethnic diversities. Students will do individual research on cultural/ethnic area of their choice.

THTRE 260. Stage Movement. (3) A study of the technique of stage movement and an investigation of the language of gesture.

◆THTRE 261. Fundamentals of Acting. (3) Theory and practice of fundamental skills and techniques of acting. Major emphasis is on freeing and training the individual's imagination, intellect, body, and voice through designed exercise and performed scenes. Three hours rec. per week.

THTRE 263. Oral Interpretation of Literature. (3) Techniques of reading from the printed page, selecting portions from various forms of literature, including narrative poetry. essay, lyric, sonnet, nonfictional prose, scenes from plays, and selected short stories.

THTRE 265. Fundamentals of Improvisation II. (3) Introduction to the techniques of improvisation with the emphasis upon practical participation.

THTRE 267. Fundamentals of Stage Costuming and Makeup. (3) I, II. Basic techniques of stage costume construction and stage make-up. Examination of the costume design process. Conc. enrollment in at least one credit of THTRE 211 required.

THTRE 268. Techniques of Makeup. (1) Techniques of makeup for stage, movies, and television.

◆THTRE 270. Introduction to Theatre. (3) A comprehensive introduction to theatre: basic elements of theater and theater production, theater history, dramatic literature, multicultural theater traditions and perspectives, and the theatre experience.

THTRE 275. Summer Theatre Workshop. (0–6) S. Supervised participation in a summer theatre repertory/stock program. Limited to freshmen and sophomores. May be repeated for a maximum of 6 hours credit. Pr.: Consent of instructor.

THTRE 330. Dramatic Comedy and the Theory of Laughter. (3) Intersession only. An examination of the origin, structure, and historical development of dramatic comedy, with a special emphasis on the psychology of laughter. Representative essays expounding various theories of the comic.

THTRE 361. Intermediate Acting. (3) Emphasis upon expanding the actor's capabilities through more advanced scene work and character study. Pr.: THTRE 261 and consent of instructor.

THTRE 368. Fundamentals of Technical Production. (3) I. Basic techniques, equipment and materials used in scenery construction and theatrical drafting. Conc. enrollment in at least 1 hour of THTRE 211 is required.

THTRE 369. Introduction to Theatrical Design. (3) An exploration of the four areas of stage design: sets, lights, costumes, and sound. Incudes examination of relevant history and technology in these areas. Emphasis is on the design process and design development.

THTRE 370. Dramatic Structure. (3) Fundamentals of play analysis for directors with emphasis upon concepts of form, style, characterization, discovery, and reversal. Includes practice in analyzing plays of various forms and styles.

THTRE 475. Opera Workshop. (1–6) Principles and techniques of operatic and musical theatre production, with emphasis on class rehearsal and performance of selected scenes from opera and musical drama; brief survey of the history of opera. Offered jointly by the Departments of Speech and Music. Same as MUSIC 475.

THTRE 579. Fundamentals of Stage Lighting. (3) Theory and practice of theatrical lighting design, control systems, projection equipment, and lighting consulting. Production work with KSU Theatre season required. Pr.: THTRE 369.

Undergraduate and graduate credit in minor field

THTRE 560. Advanced Stage Movement. (3) Study in the physical development of character and advanced techniques of stage movement. May be repeated for a total of 9 hours credit by qualified students.

THTRE 561. Vocal Expression for Actors. (3) Studies and application of vocal techniques for stage productions; emphasis on development of the actor's vocal mechanism. May be repeated for a total of 9 hours credit by qualified students. Pr.: Consent of instructor.

THTRE 562. Playwriting. (3) Theoretical study and practical application of techniques of playwriting with regard to plot, characters, and production; emphasis on the one-act form.

THTRE 563. Storytelling. (2) A consideration of literary materials appropriate for children in nursery schools, kindergarten, and elementary schools. Major emphasis is on training in the art of storytelling. Pr.: SPCH 105 or 106.

THTRE 565. Principles of Directing. (3) Principles, processes and techniques of directing for the theatre. Pr.: THTRE 261.

THTRE 566. Rehearsal Techniques. (0–3) I, II. A laboratory course for students enrolled in performance and production classes. May be repeated for 6 hours. Pr.: Conc. enrollment in THTRE 765 or 783 or 779.

THTRE 568. Fundamentals of Scene Design. (3) Examination of the role of scene design in theatre, elements and objectives of design. Development, presentation, and synthesis of design images with the scripted play. Pr.: THTRE 368 and THTRE 369.

THTRE 569. Advanced Technical Production. (3) A lecture-lab course in advanced technical theatre problems of organization, planning, drafting and execution of scenery and lighting. Pr.: THTRE 368.

THTRE 570. The Musical Comedy. (3) On sufficient demand. The history of operetta and musical comedy from Offenbach to the present. Same as MUSIC 570. Pr.: MUSIC 150 or THTRE 165 or equiv.

THTRE 572. History of Theatre I. (3) II. A survey of the development of the theatre from ancient times to 1700. Pr.: Junior standing and consent of instructor.

THTRE 573. History of Theatre II. (3) I. A survey of the development of the theatre from 1700 to the present. Pr.: Junior standing or consent of instructor.

THTRE 580. Music Theatre Workshop. (2) II. Principles and techniques of musical theatre production with emphasis on rehearsal and performance of selected scenes from musical theatre. Dance, music, and theatre are studied as integrated elements within the musical theatre genre. Culminates in a public performance. Course may be repeated twice for credit. Pr.: MUSIC 202, two semesters of voice; THTRE 261; and DANCE 380; or consent of instructor.

THTRE 630. Topics in Theatre. (1–4) Selected topics in theatre. May be repeated with topic change to a maximum of 12 hours credit.

THTRE 632. Costume Design. (3) Studies in theory and practices of costume design for stage and film. Pr.: THTRE 267.

THTRE 660. Professional Theatre Tour. (2–3) Intersession, S. Supervised viewing and analysis of professional theatre productions. Travel to one or more theatre centers such as New York, London, or Los Angeles. Students are charged an additional fee to cover travel expenses. Written critical reviews of the productions are required. May be repeated once by undergraduates. Pr.: Six hours of credit in theatre.

THTRE 661. Professional Development. (1) I. Study of audition techniques including supervised preparation of appropriate material. Business aspects of professional theatre, including unions, contracts, and professional ethics. Pr.: 12 hours in theatre, music, and/or dance.

THTRE 664. Creative Dramatics. (3) The development of creative imagination and personal well-being through theatre games, improvisation, role playing, and simulation. The use of drama in recreational and educational settings. Improvisation in performing scripted drama. Pr.: Junior standing.

THTRE 665. Drama Therapy with Special Populations. (3) The therapeutic uses of drama in the development of creative imagination, self expression, and social relatedness with special populations such as the mentally disabled, the emotionally disturbed, and the senior adult. Pr.: Junior standing.

THTRE 666. Stage Management. (3) I, II. Theory and practice of stage management in the professional and nonprofessional theatre. Emphasis is on the organization of all areas of theatre knowledge needed for the running of theatrical productions. Pr.: THTRE 368.

THTRE 667. Period Styles for the Theatre I. (3) II. Survey of historical styles of architecture, furnishings, and clothing in relation to theatrical design and the history of the theatre from the Greeks to 1800. Pr.: THTRE 572 or conc. enrollment.

THTRE 668. Period Styles for the Theatre 2. (3) I. Survey of historical styles of architecture, furnishings, and clothing in relation to theatrical design and the history of the theatre from 1800 to present. Pr.: THTRE 573 or conc. enrollment.

THTRE 671. History of Opera. (3) A study of selected masterpieces of musical drama, with emphasis on the relationship of music and drama, and on the unique qualities of opera as a collective artwork. Pr.: MUSIC 201 or MUSIC 250 or THTRE 370. Same as MUSIC 650.

THTRE 672. American Ethnic Theatre. (3) Drama and stagecraft of ethnic groups in the United States, including the theatre of African, Asian, Hispanic, Jewish, and Native Americans. Pr.: Junior standing.

THTRE 710. Practicum in Theatre. (0–6) Supervised participation in a position of major responsibility. May be repeated for a maximum of 12 hours credit. Pr.: THTRE 160 or 261 or 368; junior standing; consent of supervising faculty member and approval of faculty members are required.

THTRE 711. Topics in Technical Theatre. (3) Selected topics in creative techniques and investigation for technical theatre. May be repeated for credit with change in topic. Pr.: THTRE 368 and consent of instructor.

THTRE 712. Theatre Management. (3) Theatre management, promotion, finance, organization; emphasis on contract negotiations and use of facilities.

THTRE 760. Principles of Drama Therapy. (3) Study of theory and practice in the use of drama as therapy, including assessment and treatment, individual and group practice, and psychodrama. Pr.: THTRE 664 or 665.

THTRE 761. Advanced Acting. (3) Studies in style, technique, and characterization. May be repeated once. Pr.: THTRE 361 and consent of instructor.

THTRE 762. Advanced Playwriting. (3) Further study in the writing of drama; emphasis on problems of writing full-length plays. May be repeated for a total of 9 hours credit by qualified students. Pr.: Consent of instructor. Same as ENGL 762.

THTRE 763. Reader's Theatre. (3) The nature, purpose, and production of oral interpretation of literature in the theatre; emphasis on monologue, lecture-recital, and play reading. May be repeated for a total of 6 hours credit by qualified students. Pr.: Consent of instructor.

THTRE 764. Early American Theatre. (3) Studies in the drama and stagecraft of the colonies and the United States from the beginnings to 1900. Pr.: Junior standing.

THTRE 765. Practice in Directing. (3) A lecture-lab course with emphasis on directing dramatic productions under performance conditions. May be repeated for a total of 9 hours credit by qualified students. Pr.: Consent of instructor.

THTRE 777. Aesthetics of the Theatre. (3) Principal emphasis on theoretical problems of dramatic art.

THTRE 779. Repertory Theatre. (3) Concentrated studies in theory and practice of repertory theatre productions. Reading, demonstrations, study of play scripts; play selection and production methods; operation of and assistance in production of plays in repertory. May be repeated for a total of 12 hours credit by qualified students. Pr.: Consent of instructor.

THTRE 780. Theatre Design Studio. (0–3) I. II. Advanced problems in conceptualization and realization of design, including sets, costumes, lights, and technical production. Emphasis on advanced techniques in research, analysis, and production problems. May be repeated to a maximum of 6 credits. Pr.: THTRE 567, 568, 569, or 579.

THTRE 782. Women in Theatre. (3) A history of the contributions made by women in theatre as playwrights, managers, directors, and performers; contemporary women in theatre and their experiments in expressing women's consciousness.

THTRE 783. Practice in Acting. (3) Advanced studies in characterization with emphasis on communicating with the director. Taught in conjunction with the Practice in Directing workshop. May be repeated once. Pr.: THTRE 361 and consent of instructor.

THTRE 784. Psychodrama. (3) S. Theory and practice of psychodrama as a treatment modality for use in drama therapy. Pr.: Consent of instructor.

THTRE 785. Sociodrama. (3) S. Theory and practice of sociodrama as a therapeutic and educational modality for use in drama therapy and developmental drama. Pr.: Consent of instructor.

THTRE 786. Israeli Theatre. (3) Drama and stagecraft of Israeli Theatre from its origins through the present. Pr.: Junior standing.

THTRE 799. Projects in Theatre. (1–4) Individual guided work in selected area. Only 3 hours may be applied to MA.

Dance courses

DANCE 120. Modern Dance I. (2) I, II. Introduction to principles of modern dance. Emphasis on correct body alignment, movement efficiency, and creative potential of the individual. Three hours lab a week.

DANCE 165. Ballet I. (2) I, II. Introduction to basics of classical ballet training. Includes terminology, body positions, movement vocabulary, and principles of body alignment.

DANCE 171. Jazz Dance I. (2) I, II. A basic course in jazz technique and style, focusing on isolations, rhythmic articulation, and the control and release of energy. Three hours lab a week.

DANCE 195. Improvisational Structures. (2) Exploration of personal creative sources for spontaneous movement through improvisational structures. Emphasis on solo and group problem-solving in creating a performance work.

DANCE 200. Anatomy for Dancers. (1) On sufficient demand. Analysis of human skeletal structure. Application and implication for performance, teaching, and injury prevention.

DANCE 205. Dance as an Art Form. (3) I. Dance in its religious, social, and artistic forms. Film, slides, demonstrations, and lectures will trace the function of dance in society, the influence of society on dance, how dance relates to other art forms, and current trends in the dance world.

DANCE 225. Rhythmic Notation for Dance. (1) On sufficient demand. Introduction to basic elements of meter, tempo, rhythm, and notation. Application and practice to dance pedagogy, performance, and choreography.

DANCE 250. Performance Styles. (1) Study and practice of technique and performance of specific period/historical, character, or ethnic/specialty dance styles. May be repeated three times.

DANCE 295. Dance Composition I. (3) On sufficient demand. Introduction to the principles of the choreographic craft. Practical experience in development of movement phrases. Culminating presentation and critique of work. Pr.: DANCE 195

DANCE 321. Variations and Partnering. (1) On sufficient demand. Directed study in the principles of partnering and repertoire performance in various styles and forms of choreography. Pr.: Consent of instructor.

DANCE 323. Modern Dance II. (2) I, II. May be repeated for a total of 8 hours. Only 2 of these hours may be applied toward humanities requirements. Pr.: DANCE 120 and consent of instructor.

DANCE 324. Modern Dance III. (2) I, II. May be repeated for a total of 8 hours. Only 2 of these hours may be applied toward humanities requirements. Pr.: DANCE 323 and consent of instructor.

DANCE 325. Ballet II. (2) I, II. May be repeated for a total of 8 hours. Only 2 of these hours may be applied toward humanities requirements. Pr.: DANCE 165 and consent of instructor.

DANCE 326. Ballet III. (2) I, II. May be repeated for a total of 8 hours. Only 2 of these hours may be applied toward humanities requirements. Pr.: DANCE 325 and consent of instructor.

DANCE 371. Jazz Dance II. (2) I, II. Intermediate course in jazz technique and style focusing on development of isolations, rhythmic articulation, and the control and release of energy. Performance of advanced movement sequences. May be repeated for a total of 8 hours. Only 2 of these hours may be applied toward humanities requirements. Pr.: DANCE 171.

DANCE 372. Jazz Dance III. (2) On sufficient demand. May be repeated for a total of 8 hours. Only 2 of the hours may be applied toward humanities requirements. Pr.: DANCE 371 or consent of instructor.

DANCE 380. Musical Stage Dance. (2) On sufficient demand. Technique and performance of musical stage dance. Rehearsal and performance of selected musical stage choreography. Pr.: DANCE 120, 165, or 171.

DANCE 399. Honors Seminar. (3) Open only to qualified students in the arts and sciences honors program.

DANCE 405. Applied Movement Fundamentals. (3) Study, analysis, and application of movement theory to dance training, education, creation, and performance. Scientific and somatic principles are emphasized in the art form and body therapies. Pr.: DANCE 200.

DANCE 420. Dance Theatre Lab. (0) I, II. Practice in technique, improvisation, and choreographic process. Study of technical training to enhance cognitive, perceptual, and application skills in dance. Pr.: Consent of instructor.

DANCE 455. Movement Exploration and Creative Dance for Children. (3) I. Application of scientific principles to the teaching of basic movement concepts and creative dance for grades K–6. Emphasis upon a guided discovery and problem-solving approach. One hour lec. and four hours lab a week. Pr.: KIN 320, 330, and 335 (or any two and conc. enrollment in the third).

DANCE 459. History of Dance in Its Cultural Setting. (3) II. The study of developments and changes in the style, technique, and purpose of ceremonial and theatrical dancing from the Greeks to the present. Emphasis on the interaction between this art and the total culture—social, religious, artistic, and political—in which it is performed. Pr.: Sophomore standing. Same as HIST 459.

DANCE 495. Dance Composition II. (3) On sufficient demand. Advanced training and directed experiences in dance composition. Development of theme, phrasing, and style with particular emphasis on group forms. Pr.: DANCE 295.

DANCE 498. Honors Tutorial in Dance. (1–3) I, II. Individually directed research/creative endeavor in dance, normally as a preliminary to writing a senior honors thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the honors program of the College of Arts and Sciences, and permission of instructor.

DANCE 499. Senior Honors Thesis. Open only to seniors in the arts and sciences honors program.

DANCE 502 Performance Production. (1–2) I, II. Studies in the techniques of dance production and performance. Emphasis is on practical application. May be repeated four times. Pr.: Junior standing or consent of instructor.

DANCE 504. Performance Aesthetics. (3) On sufficient demand. Examination of performance as art. Analysis of general aesthetic theory to performance through such issues as style, content, form, gender, and role. Oral and written experience in planning, executing, and assessing performance events. Pr.: Junior standing or consent of instructor.

DANCE 505. Methods and Materials of Teaching Dance. (2) On sufficient demand. An in-depth survey of the development of dance education and a practical examination of dance for its educative, artistic, disciplinary, and therapeutic values. Emphasis on role of dance education, pedagogy, and advocacy. Pr.: DANCE 205, 405, and 504 or consent of instructor.

DANCE 506. Dance Education Fieldwork. (1) On sufficient demand. A semester of supervised fieldwork incorporating dance as an educative tool in the classroom, in a therapeutic setting, or in an advocacy position. Application of dance education theory under faculty supervision and conference. Pr.: DANCE 505.

DANCE 510. Senior Project. (1) Student creates and presents major performance, choreographic or written project demonstrating advanced level of achievement. Pr.: Senior standing and consent of instructor.

DANCE 520. Principles of Dance Technology. (3) On sufficient demand. Examination and application of video and computer technology to dance. Includes instruction and use in performance, choreography, education and research. Emphasis on conceptual framework. Pr.: Senior standing.

DANCE 599. Independent Studies in Dance. (1–3) Selected topics in dance. Maximum of 3 hours applicable toward degree. Pr.: Consent of department head.

Statistics

Dallas E. Johnson,* Head

Professors Higgins,* Johnson,* Keller–McNulty,* Kemp,* Milliken,* Nelson,* and Yang;* Associate Professors Boyer,* El Barmi,* Loughin,* Neill,* and Schwenke;* Assistant Professors Pontius* and Rumsey;* Emeritus: Professors Perng, Feyerherm, and Fryer.

Statistics is a combination of classical mathematics, the theory of probability, and new concepts related to inductive reasoning that have developed during the past 75 years.

Almost all activities of plants and animals (including people) depend to some degree on chance events, and most decisions made by people depend on sampling information—which also depends on chance events, and hence on probability. Consequently, fields of interest and activities for a statistician potentially are very broad.

Likewise, the professional activities open to a trained statistician are quite varied. The existence of modern-day computers relieves the statistician of tedious computations and elevates his or her professional activity to dealing with people and/or engaging in basic research.

Students who major in statistics may seek a bachelor of arts degree or a bachelor of science degree by satisfying the general requirements of that degree, and completing the following:

MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
MATH 222	Analytic Geometry and Calculus III	4
MATH 551	Applied Matrix Theory	3
CIS 200	Fundamentals of Computer Programming	2
CIS 203	Fundamentals of Computer Programming Lab	1
STAT 410	Probabilistic Systems Modeling	3
STAT 510	Introductory Probability and Statistics I	3
STAT 511	Introductory Probability and Statistics II	3
STAT 704	Analysis of Variance and Covariance	2
STAT 705	Regression and Correlation Analyses	2
STAT 720	Design of Experiments	3
IE 541	Statistical Quality Control	3
Statistics elective	(STAT 710, 716, 717, or 722)	3
ENGL 516	Written Communication for the Sciences	3

Upper division quantitative electives 9
(May include mathematics, computer science, or other approved courses)
A minimum of 2.0 GPA in STAT courses taken as part of the major is required for graduation.

Statistics minor

Students interested in quantitative methods to complement their major area of study may select a minor in statistics. The requirements are:

One of: STAT 320, 330, 340, 350, 510
One of: STAT 341, 351, 511
Both: STAT 704, 705
One of: Another approved course of two or more hours that requires statistics as a prerequisite. The course may be another statistics course or a quantitative course from another department.

Dual majors and dual degrees

Students may major in statistics and another discipline within the College of Arts and Sciences. The degree requirements of both departments must be met. For instance, it is possible to complete a dual statistics-mathematics degree in four years.

Students may obtain a dual degree in statistics and a field in another college such as business administration or engineering. The degree requirements of both colleges must be met and a minimum of 150 hours must be completed. Students who choose this option should complete the calculus sequence by the end of the sophomore year.

Statistics courses

◆STAT 100. Statistical Literacy in the Age of Information. (3) I, II. This course is intended for majors in non-quantitative fields. Focus will be on the development of an awareness of statistics at the conceptual and interpretative level, in the context of everyday life. Data awareness and quality, sampling, scientific investigation, decision making, and the study of relationships are included. Emphasis will be on the development of critical thinking through in-class experiments and activities, discussions, analyses of real data sets, written reports, and collaborative learning. Computing activities will be included where appropriate; no previous computing experience required. Pr.: MATH 100. Cannot be taken for credit if credit has been received for any other statistics course.

◆**STAT 320. Elements of Statistics.** (3) I, II. A basic first course in probability and statistics; frequency distributions; averages and measures of variation; probability; simple confidence intervals and tests of significance appropriate to binomial and normal populations; correlation and regression, including confidence intervals and tests of significance for bivariate populations. Pr.: MATH 100.

◆**STAT 330. Elementary Statistics for the Social Sciences.** (3) I, II, S. A basic first course in probability and statistics with textbook, examples, and problems aimed toward the social sciences and humanities. Frequency distributions, averages, measures of variation, probability, confidence intervals; tests of significance appropriate to binomial, multinomial, and normal sampling; simple regression and correlation. Pr.: MATH 100. Cannot be taken for credit if credit has been received for STAT 320, 340, or 350.

◆**STAT 340. Biometrics I.** (3) I, II. A basic first course in probability and statistics with textbook, examples, and problems aimed toward the biological sciences. Frequency distributions, averages, measures of variation, probability, confidence intervals; tests of significance appropriate to binomial, multinomial, Poisson, and normal sampling; simple regression and correlation. Pr.: MATH 100. Cannot be taken for credit if credit has been received for STAT 320, 330, or 350.

STAT 341. Biometrics II. (3) II. Analysis and interpretation of biological data using analysis of variance, analysis of covariance, and multiple regression. Negative binomial distribution and its applications. Pr.: STAT 320, 330, 340, or 350.

◆**STAT 350. Business and Economic Statistics I.** (3) I, II, S. A basic first course in probability and statistics with textbook, examples, and problems pointed toward business administration and economics. Frequency distributions, averages, index numbers, time series, measures of variation, probability, confidence intervals, tests of significance appropriate to binomial, multinomial, Poisson, and normal sampling; simple regression and correlation. Pr.: MATH 100. Cannot be taken for credit if credit has been received for STAT 320, 330, or 340.

STAT 351. Business and Economic Statistics II. (3) I, II, S. Continuation of STAT 350 including study of index numbers, time series, business cycles, seasonal variation, multiple regression and correlation, forecasting; some nonparametric methods applicable in business and economic studies. Pr.: STAT 320, 330, 340, or 350.

◆**STAT 399. Honors Seminar in Statistics.** (3) Selected topics. May be used to satisfy quantitative requirements for B.S. degree. Open only to students in the honors program.

STAT 410. Probabilistic Systems Modeling. (3) I, II. Basic probability; discrete and continuous random variables; Markov chains; Poisson process; birth and death process; applications for queuing theory and reliability theory; computer simulation of random phenomena. Pr.: MATH 221, CIS 300, 570, or consent of instructor.

STAT 490. Statistics for Engineers. (1) I, II. First course in statistics with examples and problems toward engineering. Distributions, means, measures of variation, confidence intervals, graphical display of data, simple regression and correlation, philosophy of experimentation. Must be taken conc. with a laboratory course in engineering which uses statistics.

STAT 491. Statistics for Engineers II. (1) I, II. A continuation of STAT 490. Offered second half of the semester following STAT 490. Statistical tests, multiple regression, model fitting, simple comparative and factorial experiments. Emphasis on computer analysis of data. Pr.: STAT 490.

STAT 510. Introductory Probability and Statistics I. (3) I, II. Descriptive statistics, probability concepts and laws, sample spaces; random variables; binomial, uniform, normal, and Poisson; two-dimensional variates; expected values; confidence intervals; binomial parameter, median, normal mean, and variance; testing simple hypotheses using CIs and X^2 goodness of fit. Numerous applications. Pr.: MATH 222.

STAT 511. Introductory Probability and Statistics II. (3) I, II. Law of Large Numbers, Chebycheff's Inequality; continuation of study of continuous variates; uniform, exponential, gamma, and beta distribution; Central Limit Theorem; distributions from normal sampling; introduction to statistical inference. Pr.: STAT 510.

Undergraduate and graduate credit

STAT 702. Statistical Methods for Social Sciences. (3) I, II. Statistical methods applied to experimental and survey data from social sciences; test of hypotheses concerning treatment means; linear regression; product-moment, rank, and bi-serial correlations; contingency tables and chi-square tests. Pr.: MATH 100.

STAT 703. Statistical Methods for Natural Scientists. (3) I, II, S. Statistical concepts and methods basic to experimental research in the natural sciences; hypothetical populations; estimation of parameters; confidence intervals; parametric and nonparametric tests of hypotheses; linear regression; correlation; one-way analysis of variance; t-test; chi-square test. Pr.: Junior standing and equiv. of college algebra.

STAT 704. Analysis of Variance. (2) I, II, S. Computation and interpretation for two- and three-way analyses of variance; multiple comparisons; applications including use of computers. Meets four times a week during first half of semester. Pr.: One previous statistics course.

STAT 705. Regression and Correlation Analyses. (2) I, II, S. Multiple regression and correlation concepts and methods; curvilinear regression; applications including use of computers. Meets four times a week during second half of semester. Pr.: One previous statistics course.

STAT 706. Basic Elements of Statistical Theory. (3) I. The mathematical representation of frequency distributions, their properties, and the theory of estimation and hypothesis testing. Elementary mathematical functions illustrate theory. Pr.: MATH 205, 210, or 220 and STAT 320 or equiv.

STAT 710. Sample Survey Methods. (2) II, in even years. Design, conduct, and interpretation of sample surveys. Pr.: STAT 702 or 703. Meets four times a week during first half of semester.

STAT 713. Applied Linear Statistical Models. (3) I. Matrix-based regression and analysis of variance procedures at a mathematical level appropriate for a first-year graduate statistics major. Topics include simple linear regression, linear models in matrix form, multiple linear regression, model building and diagnostics, analysis of covariance, multiple comparison methods, contrasts, multifactor studies, blocking, subsampling, and split-plot designs. Pr.: Prior knowledge of matrix or linear algebra and one prior course in statistics. A student may not receive credit for both STAT 704/705 sequence and STAT 713.

STAT 716. Nonparametric Statistics. (2) II, in even years. Hypothesis testing when form of population sampled is unknown: rank, sign, chi-square, and slippage tests; Kolmogorov and Smirnov type tests; confidence intervals and bands. Meets four times a week during second half of semester. Pr.: One previous course in statistics.

STAT 717. Categorical Data Analysis. (3) II. Analysis of categorical data arranged in two- and higher-dimensional contingency tables using classical methods and log linear models. Various measures of association are discussed. Pr.: STAT 704, 705.

STAT 720. Design of Experiments. (3) I, S. Planning experiments so as to minimize error variance and avoid bias; Latin squares; split-plot designs; switch-back or reversal designs; incomplete block designs; efficiency. Pr.: STAT 704 and 705.

STAT 722. Experimental Designs for Product Development and Quality Improvement. (3) II. A study of statistically designed experiments which have proven to be useful in product development and quality improvement. Topics include randomization, blocking, factorial treatment structures, factional factorial designs, screening designs, and response surface methods. Pr.: STAT 511 or STAT 704 and STAT 705.

STAT 725. Digital Statistical Analysis. (3) II. Techniques of programming in algorithmic languages for statistical applications. Topics include efficiency and numerical accuracy of algorithms, random number generation, Monte Carlo methods, techniques of simulation, and some basic principles of numerical analysis. Pr.: CIS 200 or equiv., STAT 704 and 705.

STAT 730. Multivariate Statistical Methods. (3) I. Multivariate analysis of variance and covariance; classification and discrimination; principal components and introductory factor analysis; canonical correlation; digital computing procedures applied to data from natural and social sciences. Pr.: STAT 704, 705.

STAT 736. Bioassay. (2) I, in odd years. Direct assays; quantitative dose-response models; parallel line assays; slope ratio assays; experimental designs for bioassay; covariance adjustment; weighted estimates; assays based on quantal responses. Meets four times a week during second half of semester. Pr.: STAT 704, 705.

STAT 740. Nonlinear Models. (3) S, in even years. Methods of estimating parameters of nonlinear models; procedures for testing hypotheses; construction of confidence intervals and regions; nonlinear analysis of covariance; quantal dose response and probabilistic choice models. Pr.: MATH 222, STAT 720.

STAT 745. Graphical Methods, Smoothing, and Regression Analysis. (3) II, in even years. Visual display of quantitative information. Graphical techniques to portray distributions of data, multivariate information, means comparisons, and assessment of distributional assumptions. Data smoothing techniques including loess, parametric, robust, and nonparametric regression, and generalized additive models. Graphical evaluation of smoothing techniques including assessment of assumption. Regression diagnostics.

STAT 770. Theory of Statistics I. (3) I. Probability models, concepts of probability, random discrete variables, moments and moment generating functions, bivariate distributions, continuous random variables, sampling, Central Limit Theorem, characteristic functions. More emphasis on rigor and proofs than in STAT 510 and 511. Pr.: MATH 222.

STAT 771. Theory of Statistics II. (3) II. Introduction to multivariate distributions; sampling distributions, derivation, and use; estimation of parameters, testing hypothesis; multiple regression and correlation; simple experimental designs; introduction to nonparametric statistics; discrimination. Pr.: STAT 770.

STAT 799. Topics in Statistics. (Var.) I, II, S. Pr.: STAT 703 or 770 and consent of instructor.

Business Administration

Yar M. Ebadi, Dean
Stanley W. Elsea, Associate Dean
Cynthia S. McCahon, Assistant Dean

110 Calvin Hall
785-532-7190

The main objective of the College of Business Administration is to provide a balanced program for general education and professional study in business administration and accounting.

The degree programs in business offered by the College of Business Administration are accredited by the American Assembly of Collegiate Schools of Business.

Throughout a student's academic career, the business firm is examined as a vital social, economic, and political institution. To equip the prospective executive and specialist for future professional responsibilities, the college organizes instructional activities around two themes: one, the businessperson as the manager of operations and decision maker in a particular firm; two, the businessperson as one who must analyze and adapt to the larger economic, social, and political environment of which he or she and the firm are integral parts. Both subject matter and instructional techniques focus on decision making and implementation of decisions through critical and creative analysis.

The College of Business Administration also sponsors numerous short courses and conferences for business and management groups.

At the undergraduate level, the College of Business Administration seeks to produce graduates with a broad education in the arts, sciences, and humanities; a solid knowledge and understanding of the functioning of the business world; sufficient knowledge and skill in a field of specialization to obtain positions in business; and the proven ability to think creatively and analytically in order to progress into positions of greater responsibility.

General Requirements

Bachelor of science in business administration

Business administration pre-professions

Students entering college for the first time and eligible for admission to K-State must enroll in the business administration pre-professions program (BAPP). Students with previous academic work (either at K-State or elsewhere) requesting transfer to the College of Business Administration must have a 2.0 or higher grade point average and enroll in the BAPP curriculum. For purposes of admission, grade point averages will be based on all courses attempted at colleges or universities.

The BAPP program provides course work in communications, mathematics, social sciences, humanities, and natural sciences. The purpose of the BAPP curriculum is to help students develop the descriptive and analytical foundation necessary for the study of business administration. Remaining "core courses" in business administration and courses in the degree-track majors are taken after successful completion of the BAPP program.

The BAPP is expressly designed as a non-degree program; students with 75 or more credit hours will not be allowed to enroll in BAPP. Students with more than 75 hours who have consistently met the grade point requirements may be admitted into degree-track majors.

Admission to a degree-track (major) in accounting, finance, management, or marketing is necessary for graduation. Applicants for admission to one of the degree tracks, other than accounting, will be accepted upon completion of a minimum of 45 credit hours with an overall grade point average of 2.50 or above. For accounting the grade point average for admission to the degree track is 3.0.

Requirements for BAPP

		Cr. hrs.	Semester to take
Communications			
ENGL 100	Expository Writing I	3	1
ENGL 200	Expository Writing II	3	3–4
SPCH 105	Public Speaking IA	2	1–3
Communications elective		3	1–4
Communications elective		3	1–4

Choose six communications elective hours from the following list of courses:

ENGL 300	Expository Writing III
MKTIB 442	Personal Selling
SPCH 311	Business and Professional Speaking
SPCH 320	Theories of Human Communication
SPCH 321	Public Speaking II
SPCH 322	Interpersonal Communication
SPCH 326	Small Group Discussion Methods
SPCH 331	Criticism of Public Discourse
SPCH 526	Persuasion

		Cr. hrs.	Semester to take
Quantitative			
MATH 100	College Algebra**	3	1–2
MATH 205	General Calculus and Linear Algebra**	3	2–3
CIS 101	Introduction to Personal Computing	1	2–3
CIS 102	Spreadsheet Applications	1	2–3
CIS 103	Database Applications	1	2–3

Optional: CIS 104 Word Processing (1 hr.)—Course will count as unrestricted elective.

		Cr. hrs.	Semester to take
MANGT 366	Management Information Systems	3	3–5
STAT 350	Business and Economic Statistics I	3	3–4
Economics			
ECON 110	Principles of Macroeconomics	3	3–4
ECON 120	Principles of Microeconomics	3	3–4
Social science electives		9	1-4

Choose nine social science elective hours from the following list of courses:

ANTH	All courses except those which count as humanities or natural science electives are acceptable.
DEN 450	Impact of Technology on Society
ECON	All courses except ECON 110 and 120. Courses may not overlap with those used to satisfy economics, restricted, or unrestricted electives.
FSHS 110	Introduction to Human Development
FSHS 301	The Helping Relationship
FSHS 350	Family Relationships and Gender Roles
FSHS 412	Consumer Rights and Responsibilities
GEOG	All courses except GEOG 220 and GEOG 221 are acceptable.
GNHE 310	Human Needs
IBH 600	British Cultural Survey
POLSC	All courses
PSYCH	All courses
SOCIO	All courses

		Cr. hrs.	Semester to take
Humanities electives		6	1–4

Choose six humanities elective hours from the following list of courses:

AMETH 160	Introduction to American Ethnic Studies
ANTH 515	Creativity and Culture*
ANTH 516	Ethnomusicology*
ANTH 517	African American Music and Culture*
ARCH 301	Appreciation of Architecture
ART	All courses*
DANCE	All courses*
ENGL	All literature courses
HIST	All courses
MLANG	All modern language courses
MUSIC	All courses *
PHILO	All courses
THTRE	All courses*
WOMST	All courses

*Students may take a maximum of 3 credit hours in participation or artistic skill development courses.

		Cr. hrs.	Semester to take
Natural science electives		7	1–4

One lab course required. Choose two natural science elective courses (including one lab) from the following list:

AGRON 220	Crop Science
ANTH 280	Introduction to Physical Anthropology
ANTH 281	Introduction to Physical Anthropology Lab
BIOCH	All courses
BIOL	All courses
CHM	All courses
FN 132	Basic Nutrition
GEOL	All courses
GEOG 220	Environmental Geography I (4 hrs., includes 1 hr. lab)
GEOG 221	Environmental Geography II (4 hrs., includes 1 hr. lab)
PHYS	All courses

Students may complete the remainder of their life and natural science requirement with any courses from the following list of courses or any other life or physical science courses for which they have prerequisites. It will be useful to take courses that also fill the general education requirements when they are available.

AGRON 305	Soils
AGRON 315	Properties of Soils
AGRON 335	Environmental Quality
ANTH 680	Survey of Forensic Sciences
ANTH 688	Paleoanthropology
ANTH 691	Primatology
ANTH 694	Osteology
ANTH 695	Osteology Lab

		Cr. hrs.	Semester to take
Business core courses			
ACCTG 231	Accounting for Business Operations	3	3
ACCTG 241	Accounting for Investing and Financing	3	4
GENBA 101	Business Orientation	0	1–2

Note: Students who enter the College of Business Administration with 45 or more credit hours completed are not required to take Business Orientation.

****Mathematics requirement**
Students are eligible to take MATH 100 College Algebra if they meet one of the following prerequisites:
1. MATH 010 Intermediate Algebra with grade of B or better
2. Two years of high school algebra and a College Algebra PROB ≥ C of 60 or more on the ACT assessment
3. A score of at least 18 on the mathematics placement test

Students who don't meet these prerequisites are encouraged to take MATH 010 Intermediate Algebra before taking College Algebra. Credit received for Intermediate Algebra does not apply toward the hours required for graduation.

Students are eligible to take MATH 205 General Calculus and Linear Algebra if they meet one of the following prerequisites:
1. MATH 100 College Algebra with grade of C or better
2. Two units of high school algebra and one unit of high school trigonometry

Students are eligible to take MATH 220 Analytic Geometry and Calculus I if they meet one of the following prerequisites:
1. MATH 100 College Algebra with grade of B or better and MATH 150 Plane Trigonometry with grade of C or better
2. Three years of college prep math (including trigonometry) and a Calculus I Prob ≥ C of 55 or more on the ACT assessment
3. A score of at least 26 on the mathematics placement test

Students who test directly into MATH 205 or MATH 220 and complete the course will have the MATH 100 requirement waived, and three credit hours will be added to the unrestricted/nonbusiness electives requirement of his/her degree track program (two credit hours will be added if MATH 220 is taken).

The exact sequence of the courses to be taken is worked out between student and advisor. There is some flexibility in scheduling. To enroll in any course, students must have prerequisites as stated in the catalog.

Applications for a degree-track (major) must be made by November 1, April 1, or July 1 of the respective semester during which the student will have completed at least 45 credit hours of the pre-professional requirements. Decisions for admission will be made as soon as possible after the end of the semester.

Degree requirements
Candidates for the bachelor of science in business administration must complete at least 27 credit hours of resident instruction in upper-division courses after acceptance and enrollment in a degree track program in the college. Exceptions may be considered for those who have consistently exceeded a 2.50 grade point average on upper-division courses applied toward the degree. See additional residency requirements earlier in this catalog.

University General Education

The College of Business Administration requires 18 credit hours to fulfill the university general education requirements. These 18 credit hours may overlay with the business general studies requirements in humanities, social sciences, and natural sciences.

At least 1/3 (6 credit hours) of the 18 credit hours must be taken in courses numbered 300 or above. The business general education requirements include:

ECON 110	Macroeconomics	3
ECON 120	Microeconomics	3
Humanities		3
Social sciences		3
Natural sciences		3
Any course (except business courses) approved for university general education credit		3
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You may obtain a list of acceptable humanities, social sciences, and natural sciences courses from Student Services in 107 Calvin Hall.

In course descriptions, university general education courses are marked with a ◆. The Degrees section at the front of this catalog lists other university general education courses. A list of currently offered university general education courses is available on the web at these addresses:
- http://www.ksu.edu/course/
- http://www.ksu.edu.educadv/

International overlay course

One course dealing with history, geography, language, economics, or culture related to parts of the world other than the United States is also required. This course can overlay with other course requirements.

Program Options

Dual degree in business administration

The dual degree programs allow students to earn the bachelor of science in business administration degree in addition to a nonbusiness degree. Because of course sequence requirements, students should begin the dual degree program in their sophomore year. Students must be enrolled in both the college offering the nonbusiness degree and the College of Business Administration.

Any student who wishes to complete a dual degree must satisfy the requirements for both degrees. The business administration requirements include course work in the following areas: communications, quantitative, social sciences, economics, and business. For further information about the exact academic requirements, contact Student Services, College of Business Administration, 107 Calvin Hall, 785-532-6180.

Associate of arts degree at Fort Riley (A.A.)

In cooperation with the Division of Continuing Education, the College of Business Administration offers an A.A. degree at Fort Riley, Kansas. This program is designed primarily for military personnel. Sixty semester hours of academic work are required to earn the degree. The requirements include work in communications; mathematics; computer science; social, behavioral, and natural sciences; humanities; economics; and business. For information about the exact academic requirements, write to Fort Riley Degree Program, Division of Continuing Education, College Court Building.

Honors program

The business honors program offers qualified students opportunities beyond those found in the regular business curriculum. Honors students can enroll in smaller, more interactive sections of core business courses; they can enroll in honors sections of courses offered by other colleges, such as Honors Composition; they are provided with access to the college's electronic mail system; and, if they choose, students are paired with professionals in their chosen field in a mentoring relationship.

To qualify for the business honors program, entering freshmen must have a composite score of 27 or above on the ACT. Upperclassmen and transfer students must have a 3.6 or better cumulative grade point average. Enrollment in the honors seminar (or receipt of a formal leave of absence from the business honors program) is also required every semester. A grade of F for the seminar automatically disqualifies a student from the business honors program.

To graduate in the business honors program, students must earn 25 honors points. Points are earned by taking honors sections of business core courses and/or honors sections of courses in other colleges; by taking the honors seminar; and by holding leadership positions in student organizations. Students must receive a grade of C or above in any honors section in order to earn honors points for it.

Freshmen and sophomores who qualify enroll in GENBA 299 (honors colloquium) to join the program. Juniors and seniors who qualify enroll in GENBA 499 (honors seminar). The topic and format of the seminar vary every semester. One hour of unrestricted elective credit is given for each semester of honors seminar completed.

Cooperative education

The College of Business Administration, through the internship program, offers opportunities for students to obtain experience in business and industry as part of their college education. Students enroll through Career and Employment Services and are selected through formal interviews with participating companies.

Pre-business education

Pre-business education majors are enrolled in and advised by the College of Education. Students interested in the field are instructed to refer to the College of Education section for details.

Pre-law

Law schools emphasize various objectives in pre-law study for the development of basic skills and insights. These objectives are: the acquisition of skills in comprehension and expression; understanding human institutions; and the ability to think clearly, carefully, and independently. A pre-law student enrolled in the College of Business Administration not only achieves these important goals, but also obtains a broad business background that is desirable preparation for the study of law.

Business minor

Upon graduation, most students will be involved in organizations, profit or nonprofit, that will use business concepts and principles to improve their services or products. To complete the business minor students must graduate from another Kansas State University college and complete the business courses listed below:

ACCTG 231	Accounting for Business Operations	3
ACCTG 241	Accounting for Investing and Financing	3
MANGT 420	Management Concepts	3
MKTG 400	Marketing	3
FINAN 450	Essentials of Finance	3
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Students will be responsible for meeting the prerequisites for the business courses in the minor program. Three of the five courses must be completed at Kansas State University.

Small Business Development Center

Frederick H. Rice, Director
2323 Anderson Avenue, Suite 100
Manhattan, Kansas 66502–2912
785-532-5529

The Small Business Development Center belongs to a statewide network that is part of a national consortium of more than 575 centers that share the knowledge of universities with small business owners.

The center serves a seven-county area in north central Kansas and provides: free individual confidential counseling on a range of business topics; workshops and evening classes on business start-up, marketing, recordkeeping, and computers; and information through a library of books, magazines, audio and video tapes, and computer data search services.

Specialized services include: (1) the Robert G. Chapman Small Business Computing Center, which uses state-of-the-art computer systems to teach business owners how to use computers in their businesses and supports a wide range of research projects; (2) Entrepreneurship-Planning for Success, a noncredit 12-week in-depth course for serious entrepreneurs interested in starting or growing small businesses; (3) the Small Business Institute, which links teams of senior business students to evaluate small businesses and recommend corrective strategies; and (4) the Kansas Rural Enterprise Institute, which conducts research and educational programs focused on business development strategies for rural Kansas.

Summer internships are offered to qualifying juniors or seniors in the College of Business Administration. Students may earn 3 credit hours through a qualifying summer work program with a cooperating business.

Accounting

O. Finley Graves,* Head

Professors Donnelly,* Graves,* and Stark;* Associate Professors Deines,* Fisher,* Ott,* Thomas,* and Vruwink;* Assistant Professor Kovar; Instructors Brockway, Charland, Lyle, and Smith.

Accounting is often called the "language of business" because its terms and concepts are used to describe the daily events of business. The accountant measures and reports to various users the relevant financial information necessary for decision making.

The objective of the undergraduate accounting program is to provide basic conceptual accounting and business knowledge as a foundation for accounting career development in all areas. The program requirements that accomplish these objectives are specified below.

Requirements for major

BAPP Program ... 60
(See general section of the College of Business Administration.)

Business core courses		**24**
FINAN 450	Introduction to Finance	3
MANGT 420	Management Concepts	3
MANGT 421	Introduction to Operations Management	3
MANGT 466	Management Information Systems	3
MANGT 595	Business Strategy	3
MANGT 596	Business, Government, and Society	3
MKTG 400	Marketing	3
STAT 351	Business and Economic Statistics II	3

Major field		**24**
ACCTG 331	Accounting Processes and Controls	4
ACCTG 342	Taxation I	3
ACCTG 432	Managerial Reporting	3
ACCTG 433	Financial Reporting	3
ACCTG 434	Accounting for Not-For-Profit Entities	2
ACCTG 442	Auditing	3
ACCTG 641	Accounting Theory and History	3
ACCTG 642	Accounting Research	3

Economics electives (All courses numbered above 120 except 505 and 506) ... 6

Restricted electives ... 9
Humanities, natural sciences, quantitative, or social science courses below qualify for restricted electives.

Humanities—See BAPP requirements in this college section.

Natural science—See BAPP requirements in this college section.

Quantitative—All courses in the computing and information sciences department numbered 300 or above; MATH 221 or 222; all statistics courses numbered 500 and above.

Social science—All courses in anthropology, history, political science, psychology, sociology, and economics, except those used as BAPP requirements or economics electives; all courses in geography, except those listed as natural sciences.

Unrestricted electives ... 3
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Accounting courses

◆**ACCTG 231. Accounting for Business Operations.** (3) I, II. An introduction to the operating activities of businesses and the roles that accounting information plays in planning, evaluating, and recording those activities. An introduction to financial statements is included. Pr.: Sophomore standing and MATH 100.

◆**ACCTG 241. Accounting for Investing and Financing.** (3) I, II. Extends the concepts of planning and evaluation to the business activities of acquiring, disposing, and financing productive assets. Financial statement analysis will be covered. Pr.: ACCTG 231.

ACCTG 331. Accounting Processes and Controls. (4) I, II. The accounting information system will be shown as a means of insuring the accuracy of information and safeguarding assets. Students will interpret documents and record many transactions that typically occur in business, governmental units, and not-for-profit entities. Four hours lec. and one hour lab a week. Pr.: ACCTG 241.

ACCTG 342. Taxation I. (3) I, II. Fundamental concepts of income determination in federal and state income tax regulations; examination of the impact of tax regulation on business and personal financial planning and decision making. Pr.: ACCTG 331.

ACCTG 431. Problems in Accounting. (Var.) I, II. Pr.: Background of courses needed for the problems undertaken and consent of instructor.

ACCTG 432. Managerial Reporting. (3) I, II. Identifying relevant accounting data and organizing, summarizing, and analyzing that data into information useful for planning and budgeting, decision making, controlling, and evaluating functions of management. Pr.: ACCTG 331, MANGT 421 and senior standing.

ACCTG 433. Financial Reporting. (3) I, II. An introduction to the U.S. and international rules and regulations that govern current reporting to external entities by profit entities. Pr.: ACCTG 331 and senior standing.

ACCTG 434. Accounting for Not-For-Profit Entities. (2) I, II. An introduction to the source of authoritative guidance, rules and regulations that govern current reporting to external entities by not-for-profit entities. Pr.: ACCTG 641.

ACCTG 442. Auditing I. (3) I, II. An introduction to the environment of auditing and the objectives and techniques of both financial and operational auditing. Pr.: ACCTG 433.

ACCTG 494. Accountants' Professional and Legal Responsibilities. (3) II. An intensive study of an accountants' professional responsibilities to the public and the profession and the knowledge of the legal implications of business transactions, particularly as they relate to accounting and auditing. Pr.: ACCTG 433 and ACCTG 442 or conc. enrollment.

ACCTG 631. Accounting Internship. (3) I, II. Provides a full semester of practical accounting experience prior to entering graduate accounting program.

ACCTG 641. Accounting Theory and History. (3) I, II. The theories which underlie the practice of accounting and financial reporting including a historical perspective on the evolution of the theories. Pr.: ACCTG 331.

ACCTG 642. Accounting Research. (3) I, II. Use of the sources of authoritative guidance in resolving complex, professionally oriented problems in financial, governmental, and tax reporting. Analysis and presentation of case-material is covered. Pr.: ACCTG 433; 432 and 442 or conc. enrollment.

Finance

Ali M. Fatemi,* Head

Professors Fatemi* and Graham;* Associate Professors Dukas* and Tavakkol;* Assistant Professors Cooney,* Davis,* and Desai;* Instructors Kruse, Lehman, and Worthington. Emeriti Professors Chalmers, Hollinger and Richards.

The finance curriculum allows the student to specialize in financial management, financial controllership, or financial services.

The financial management track provides the student with the analytical skills for the analysis, evaluation, and reporting of financial information. These activities are ultimately used in managerial decision making by businesses and regulatory agencies. This track is designed for graduates who wish to pursue a career as a financial manager or analyst.

The financial controllership track supplements the analytical focus of the financial management track with additional accounting skills. This track is designed for those who intend to pursue careers related to the controllership function of a firm.

The financial services track provides a broad knowledge of financial markets, institutions, and services and prepares the student for providing financial products and services to the consumer. Graduates in this track typically seek careers in banking, consumer lending, brokerage services, financial planning, portfolio management, and real estate.

Finance majors are expected to develop a broad understanding of business management, accounting, economic theory, management information systems, and quantitative techniques. In addition, effective written and oral communication skills and the ability to work in groups are essential for a successful career in finance. The curriculum of the Department of Finance is designed to help the student develop these necessary skills through active learning methods.

Requirements for major

BAPP Program **60**

(See the general section of the College of Business Administration.)

Core courses		**31**
ACCTG 331	Accounting Processes and Controls	4
FINAN 450	Introduction to Finance	3
MANGT 420	Management Concepts	3
MANGT 421	Introduction to Operations Management	3
MANGT 595	Business Strategy	3
MANGT 596	Business, Government, and Society	3
MKTG 400	Marketing	3
STAT 351	Business and Economics Statistics II	3

Major field requirements

FINAN 551	Investments	3
FINAN 453	Careers in Finance	1
FINAN 470	Financial Analysis and Valuation	3

Financial controllership track

FINAN 660	Corporate Finance	3
FINAN 670	Cases in Financial Management	4
FINAN 432	Managerial Reporting	3
FINAN 433	Financial Reporting	3
ACCTG 342	Taxation I	3

Financial management track

FINAN 660	Corporate Finance	3
FINAN 670	Cases in Financial Management	4

Select 6 credit hours from

FINAN 641	Financing Emerging Businesses	3
FINAN 643	International Financial Management	3
FINAN 652	Short-Term Financial Management	3
FINAN 653	Security and Portfolio Analysis	3
FINAN 654	Derivative Securities and Markets	3

Accounting elective

(select one from the following)

ACCTG 432	Managerial Reporting	3
	or	
ACCTG 433	Financial Reporting	3

Financial services track

FINAN 661	Professional Financial Planning	3
FINAN 671	Cases in Financial Services	4
ACCTG 433	Financial Reporting	3

Select 6 credit hours from

FINAN 460	Insurance	3
FINAN 552	Real Estate	3
FINAN 641	Financing Emerging Businesses	3
FINAN 653	Security and Portfolio Analysis	3
FINAN 655	Commercial Banking	3

Economics

ECON 510	Intermediate Macroeconomics	3
	or	
ECON 520	Intermediate Microeconomics	3

Economics elective **3**

Economics electives must be selected from economics course offerings numbered 510 or above in consultation with the student's academic advisor. Economics electives may not overlap with economics courses used as social science, restricted, or unrestricted electives.

Nonbusiness electives* **9**

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*A nonbusiness elective can be any course numbered 100 or above offered for credit by any university department other than ACCTG, FINAN, GENBA, MANGT, or MKTIB.

Finance courses

◆FINAN 250. Personal Investing and Risk Management. (3), I, II. Provides a framework for identifying, analyzing, and managing the lifetime financial risks faced by the average person. An overview of the types and mechanics of investment instruments, development of personal risk profiles and investment plans, asset allocation methods, diversifiable and non-diversifiable risk, and risk avoidance and hedging methods. Pr.: Sophomore standing and MATH 100.

FINAN 450. Introduction to Finance. (3) I, II, S. A general overview of the major areas of finance: introduction to financial institutions, markets, and investments; essentials of investments theory, including concepts of risk, return, and valuation of financial assets; and applications to corporate investments and financing decisions. Pr.: ECON 120, STAT 350, and ACCTG 231.

FINAN 453. Careers in Finance. (1) I, II. An overview of the various types of career opportunities available in the field of finance, and how to prepare for them. Should be taken prior to first semester of senior year. Pr.: Junior standing.

FINAN 460. Insurance. (3) I. A study of life, property, casualty, and health insurance from the purchaser's point of view with additional emphasis on the operation and contribution of the insurance industry. Pr.: ECON 110.

FINAN 470. Financial Analysis and Valuation. (3) I, II. Analysis of financial statements and valuation of equity and debt from the perspectives of the firm's owners and creditors. Emphasis is placed upon the difference between the accrual accounting system and financial cash flow in discussing the firm's value, liquidity, solvency, profitability, risk, and asset utilization. Pr.: FINAN 450 and ACCTG 241.

FINAN 498. Problems in Finance. (Var.) I, II, S. Internship program and selected projects appropriate to the student's program of study. Pr.: Consent of department head based on background courses appropriate to the project selected.

FINAN 551. Investments. (3) I, II, S. Analysis of debt, equity, and derivative securities from an investor's viewpoint. Topics covered include the mechanics of investing, investment strategies, asset pricing models, and market efficiency. Pr.: FINAN 450 (may be taken concurrently with FINAN 470).

FINAN 552. Real Estate. (3) II. Principles and practices including legal, economic, and social implications from the viewpoint of the real estate practitioner, investor, and society. Pr.: Junior standing.

FINAN 641. Financing Emerging Businesses. (3) II. A study of the business environment. Methods of organizing and financing emerging businesses, investment, valuation, and financial planning from the perspective of an owner-manager. Pr. FINAN 470.

FINAN 643. International Financial Management. (3) I. The international (cross-currency) aspects of financial management. Topics include currency markets and exchange rate determination, parity conditions, foreign exchange exposure and management, and valuation of international projects. Pr.: FINAN 450.

FINAN 652. Short-Term Financial Management. (3) I. Application of financial concepts to the firm's short-term investment and financing decisions. Topics include cash collection, cash concentration, cash disbursement, banking relationships, receivables and payables management, hedging, risk management, and international short-term finance. Pr.: FINAN 470 and FINAN 551.

FINAN 653. Security and Portfolio Analysis. (3), I, II. The analysis and valuation of securities and the management of investment portfolios. Students analyze the composition of, make buy/sell recommendations for, and evaluate the performance of an actual portfolio. Pr.: FINAN 470 and 551.

FINAN 654. Derivative Securities and Markets. (3) II. Structure and operation of markets for futures, swaps, options, synthetic options, and futures on options. Valuation of futures contracts and options. Applications of derivatives to hedging and speculating strategies. Pr.: FINAN 551.

FINAN 655. Commercial Banking. (3) II. An application of financial management concepts to the liquidity management, investment portfolio analysis, capital budgeting, and capital structure decision-making process required by a commercial bank to perform effectively its financial intermediation role within the financial system's institutional, regulatory, and competitive environment. Pr.: FINAN 450.

FINAN 660. Corporate Finance. (3) I, II. In-depth study of a firm's long-term financing, capital investment, and working capital decisions. Topics include cash-flow analysis, capital asset valuation, risk, dividend policy, capital structure theory, and short-term financial management. Pr.: MATH 205, FINAN 470, and FINAN 551. (Not available for credit to students taking FINAN 850).

FINAN 661. Professional Financial Planning. (3) I, II. A study of the principles and practices of professional financial planning using an integrated planning model. Topics include the planning environment, concepts, tax management, asset acquisition and management, credit management, risk management, investments, retirement planning, and estate planning. Contemporary applications, professional opportunities, and legal/ethical standards are emphasized. Pr.: FINAN 450 and FINAN 551.

FINAN 670. Cases in Financial Management. (4) I, II. A capstone course in financial management. Utilizes the case method of instruction to provide students the opportunity to use their knowledge of the theories of finance to solve financial management problems in a realistic setting. Emphasizes the development of students' analytical skills. This course requires extensive report-writing, teamwork, oral presentations, and class discussion. Pr.: FINAN 660.

FINAN 671. Cases in Financial Services. (4) I, II. A capstone course in financial services. Uses the case discussion method to provide students the opportunity to apply their knowledge of finance theory to solve problems related to the financial services industry, including insurance, real estate, individual investments, retirement planning, and tax management. This course emphasizes the development of analytical skills and requires extensive report-writing, teamwork, and oral presentations. Pr.: FINAN 661.

FINAN 710. Managerial Finance. (3) I. An intensive coverage of the fundamentals of financial management applicable to the management of nonfinancial institutions. Pr.: MATH 100 and ECON 120.

General Business

GENBA 101. Business Orientation. (0) I, II. A general orientation to the university and the College of Business Administration. Study skills, the enrollment process, and to the various career options in business. Required for all students with fewer than 45 credit hours.

GENBA 299. Honors Colloquium in Business. (1) I, II. Open to freshmen and sophomores in the honors program for the College of Business Administration. Discussions and lectures on topics of interest to business students.

GENBA 391. Administrative Communications. (3) On sufficient demand. Preparation of business communications, reports, and correspondence, and analysis of communication systems within an enterprise structure. Pr.: ENGL 120 and SPCH 106.

GENBA 498. Problems in Business Administration. (Var.) I, II, S. In-depth analysis of special problems in general business including study of current literature. Pr.: Senior standing and consent of instructor and the department head.

GENBA 499. Honors Seminar. (1) I, II. Open to juniors and seniors in the honors program for the College of Business Administration. Selected seminars, lectures, and convocations on topics of interest to business students. Discussion sessions will follow.

GENBA 506. Theories of Gender. (3) I. Surveys major contemporary U.S. theories of gender and their development, including impact of feminist movement on the development of theory, interactions of race and gender, women's culture and men's roles. Compares approaches of social sciences and humanities. Pr.: Six hours of women's studies.

Management

J. Bruce Prince,* Head

Professors Ebadi* and Paul;* Associate Professors Elsea,* Hagmann,* McCahon,* Prince,* and Niehoff;* Assistant Professors Grossman, Katz,* Kim, Hightower,* McHaney,* Sheu,* Swanson, and Turnley; Instructors Krumwiede, Rice; and Satzler. Emeriti: Professors Barton–Dobenin, Deihl, Jones, and Townsend;* Associate Professor Thiessen; Assistant Professors Buzenberg and Riley.

The curriculum in management allows for areas of emphasis in human resource management, management information systems, operations management, and general management. In addition, the Department of Management offers courses to improve potential managers' integrative skills as well as top management skills in corporate strategy and institutional leadership. This background provides individuals with excellent opportunities for rapid advancement in professional management careers in organizations.

The KSU Center for Leadership is housed in the Department of Management. The center sponsors on-campus speakers, facilitates management development workshops, and provides funds for research on leadership and related topics.

Secondary major in industrial and labor relations

See the Secondary Majors section of this catalog.

Requirements for major in management

BAPP program		**63**
Business core		**24**
ECON 520	Intermediate Microeconomics	3
	or	
ECON 540	Managerial Economics	3
FINAN 450	Introduction to Finance	3
MANGT 420	Management Concepts	3
MANGT 421	Introduction to Operations Management	3
MANGT 595	Business Strategy	3
MANGT 596	Business, Government, and Society	3
MKTIB 400	Marketing	3
STAT 351	Business and Economics Statistics II	3
Major field requirement		**24**
MANGT 520	Organizational Behavior	3
MANGT 521	Quantitative Management	3
One of four areas of emphasis		18

Choose from one of the following four areas of emphasis:

1. Human resources management emphasis
Required:

MANGT 535	Personnel Law	3
MANGT 531	Personnel and Human Resources Management	3
Economics electives (see note below)		3

Select 9 credit hours from:

MANGT 530	Industrial and Labor Relations	3
MANGT 537	Industrial Conflict Resolution	3
MANGT 540	Small Business Consulting	3
MANGT 550	Organizational Training and Development	3
MANGT 623	Compensation Management	3
MANGT 630	Labor Relations Law	3
MANGT 631	Collective Bargaining	3
MANGT 633	Advanced Personnel Management	3
MANGT 690	International Management	3
	or	
MANGT 390	Business Law	3

2. Management information systems emphasis
Required:

MANGT 367	Information Systems Fundamentals	3
MANGT 656	Systems Analysis	3
MANGT 666	Application of Data Models in Business	3
MANGT 670	Systems Design	3
MANGT 676	Management of Local Area Networks	3
MANGT 686	Data Administration	3

3. Operations management emphasis
Required:

MANGT 531	Personnel and Human Resources Management	3
Economics elective (see note below)		3

Select 12 hours from:

MANGT 522	Operations Planning and Control	3
MANGT 641	Management of Quality	3
MANGT 652	Application of Theory of Constraints	3
MANGT 653	Project Management	3
MANGT 661	Logistics and Service Operations Management	3

4. General management/entrepreneurship emphasis
Required:

MANGT 531	Personnel and Human Resources Management	3
Economics elective (see note below)		3

Select 3 credit hours from the courses listed in the human resources management emphasis.

Select 3 credit hours from the courses listed in the operations management emphasis.

Select 6 credit hours from the courses listed in the HRM, OM, and MIS management major emphasis areas or from the courses listed below.

A total of 9 of the above credits must be management courses.

ACCTG 331	Accounting Processing and Control	4
FINAN 470	Financial Analysis and Valuation	3
MANGT 440	Entrepreneurship	3
MKTG 442	Personal Selling	3
MKTG 450	Consumer Behavior	3
MKTG 543	Integrated Marketing Communications	3
MKTG 642	Marketing Research	3

Entrepreneurship students: General management emphasis students interested in owning or managing a small business are encouraged to consider taking the following courses from the above requirements: (1) MANGT 440, (2) MANGT 540, (3) MANGT 652 or MANGT 653 or MANGT 535, and (4) MKTG 442 or MKTG 543.

Note on economics electives: The economics elective required by an emphasis area can be satisfied by all economic courses numbered above 120 except 505 and 506. We recommend that human resource management majors take ECON 523 Human Resources Economics as their elective.

Unrestricted electives **9**
An unrestricted elective may be any course numbered 100 or above offered for credit by a university department. (MIS emphasis students are encouraged to take CIS 200, CIS 300 and MANGT 653 as unrestricted electives.)

Total required credits **126**

Management courses

◆MANGT 300. Introduction to Total Quality Management. (1) I, II. Overview of major topics related to Total Quality Management (TQM), including managerial and engineering aspects. One hour lec. a week. Pr.: MATH 100, 205, or 220, sophomore standing. Crosslisted with DEN 300.

MANGT 330. Introductory Seminar. (1) II. A multidisciplinary introduction to the field of industrial and labor relations. Examines the economic, legal, psychological, and sociological aspects of the field.

MANGT 366. Management Information Systems. (4) I, II, S. A comprehensive view of the role of information technology in satisfying organizations' information requirements. Problems and techniques concerning the management of responsive information systems with special attention to managers' use of systems outputs. Cases and hands-on exercises emphasizing the use of information systems in decision making, information gathering and organizing, use of modeling techniques, and presentation of information. Pr.: Demonstrated competence in use of computer spreadsheets. Pr.: ACCTG 231 and ACCTG 241; may be taken concurrently with MANGT 366.

MANGT 367. Information Systems Fundamentals. (3) I, II. Business-oriented problem solving using information technology for decision making. The course focuses on the utilization of state-of-the-art hardware, software, and programming tools for small systems development, networking, Internet, and WWW. Pr.: MANGT 366.

MANGT 390. Business Law I. (3) I, II. A study of law as it relates to business, including court procedures and systems, contracts, torts, agency and employment law, and business crimes. Pr.: Junior standing.

MANGT 392. Business Law II. (3) On sufficient demand. A study of civil law as it affects commercial transactions, including corporations, partnerships, property, commercial paper, and secured transactions. Pr.: MANGT 390.

MANGT 420. Management Concepts. (3) I, II, S. Managing organizations through fundamental processes of developing plans, structuring work relationships, coordinating effort and activities, directing and motivating subordinates, and controlling. Also includes managerial roles and responsibilities, effective decision making, productivity improvement, and models and theories of human behavior. Pr.: ECON 120, PSYCH 110, SOCIO 211, and junior standing.

MANGT 421. Introduction to Operations Management. (3) I, II, S. Description and analysis of problems related to the output of goods and services, operations planning and control, and systems management. Pr.: MATH 205 and STAT 350.

MANGT 440. Entrepreneurship. (3) On sufficient demand. The role of the entrepreneur is examined in the conception, start-up, organization, and development of new independent businesses. New venture problems to be studied include identification of possible new products and services, evaluation of practical commercial potential, and development of a business plan, with attention to financing, operating, and marketing. Pr.: FINAN 450, MANGT 420, MKTG 400. Instructor may waive prerequisites based on appropriate business experience.

MANGT 495. Business Internship. (3) S. Eight weeks of business experience between junior and senior years designed to coordinate the interests of students and firms. Pr.: FINAN 450, MANGT 420, MKTG 400, completion of junior year, and consent of instructor.

MANGT 498. Independent Studies in Management. (Var.) I, II, S. In-depth analysis of special problems in management including study of current literature. Pr.: Senior stand, consent of instructor, and 12 hours of management.

MANGT 520. Organizational Behavior. (3) I, II. Examination of psychological and sociological variables important in understanding individual motivation, group functioning, change, creativity, and leadership in organizations. Pr.: MANGT 420.

MANGT 521. Quantitative Management. (3) I, II. Quantitative techniques, models, and the integrative nature of management systems. Includes PERT, CPM, linear programming, and inventory models. Pr.: CIS 101, 102, 103 or 200 and lab, MANGT 420, MATH 205, and STAT 350.

MANGT 522. Operations Planning and Control. (3) II. Development of concepts and understanding of planning and control systems for allocating resources and scheduling activities in business firms. To guide and coordinate the flow of materials, labor inputs, and goods and services through physical productive systems. Topics include aggregate planning, master production scheduling, production activity planning and control, operations information systems, inventory control, material requirements planning, and total quality control. Pr.: MANGT 421.

MANGT 530. Industrial and Labor Relations. (3) I. Basic course in industrial and labor relations. Broad coverage of the institution of collective bargaining and its environment, the goals and operation of labor unions, the impact of unions on management, and labor relations law. Pr.: Junior standing.

MANGT 531. Personnel and Human Resources Management. (3) I, II. The personnel program and its operational processes of manpower planning, recruiting, testing, developing, and evaluating. Analysis of the personnel department's role in the organization with emphasis on problem solving. Pr.: MANGT 420.

MANGT 535. Personnel Law. (3) I, II. A survey course designed to acquaint students with the broad and controlling aspects of prominent public laws which affect human resource management. Includes readings, cases, and dicta pertaining to ADA, ADEA, OSHA, Title VII, etc. Pr.: MANGT 531.

MANGT 537. Industrial Conflict Resolution. (3) I. Examination of causes and nature of conflict in business and between organizations. The resolution of dysfunctional conflict and management of functional conflict. Special emphasis on resolution techniques, including mediation, arbitration, negotiation, and litigation avoidance. Pr.: MANGT 530 and 630.

MANGT 540. Small Business Consulting. (3) II. In the framework of supervised field projects, student teams analyze the management programs of an actual business. Emphasis is placed on understanding operational and strategic planning problems in the context of small business. Students develop a strategic plan for the success of the business. Pr.: Junior standing or permission of the instructor.

MANGT 550. Organizational Training and Development. (3) II. The process of training and developing the human resources in organizations, which includes organizational diagnosis, needs assessment, program design, appropriate methodologies, program implementation, transfer of training, and the evaluation of program effectiveness. Current trends in the content and process of training and development activities are also examined. Pr.: MANGT 520 and MANGT 531.

MANGT 595. Business Strategy. (3) I, II, S. An integration of previous courses through the study of problems in policy formulation and implementation. Cases and current topics with emphasis on strategic planning. Open only to seniors or nonbusiness graduate students. Pr.: FINAN 450, MANGT 420, and MKTG 400.

MANGT 596. Business, Government, and Society. (3) I, II, S. The interrelationships and interactions of business with the social, political, and economic institutions. The impact of changes in the external environment on business and the managerial task. Pr.: FINAN 450, MANGT 420, and MKTG 400.

MANGT 623. Compensation Management. (3) II. An in-depth analysis of theories, research, and practices of performance appraisal and compensation systems. Includes study of the impact of economic, behavioral, legal, and political forces on compensation management. Pr.: MANGT 531.

MANGT 630. Labor Relations Law. (3) II. Detailed examination of the development and current status of labor relations law governing the private sector in interstate commerce. Topics to be discussed include antitrust prosecution of unions, injunctions, unfair labor practices, NCRR policies, employee rights, union rights, employer rights, and contract enforcement. Pr.: Junior standing.

MANGT 631. Collective Bargaining. (3) On sufficient demand. Study of the unionized labor market. The goals, strategies, and tactics of unions and management will be examined in detail. Other topics include the environment of collective bargaining, contract negotiations, administration, and enforcement. Pr.: MANGT 530; or ECON 120 and MANGT 630.

MANGT 633. Advanced Personnel Management. (3) I. On sufficient demand. An in-depth analysis of selected topics in personnel management and employment legislation including study of current research and literature. Pr.: MANGT 531.

MANGT 639. Advanced Labor Relations. (3) On sufficient demand. Research methods, model building, economics of unionized labor markets, and the behavioral theory of negotiations are examined in detail. Pr.: MANGT 631 or ECON 620.

MANGT 641. Management of Quality. (3) I. Development of quality as a management philosophy through the study of ideas from contemporary quality philosophies of Deming, Juran, and Taguchi. Statistical process control charting as a process and quality improvement tool and product and process design as important components of quality. Pr.: MANGT 421.

MANGT 652. Application of Theory of Constraints. (3) II, in even years. The intent of this course is to provide an overview of application of Theory of Constraints (TOC). TOC suggests that every process or system has at least one constraint that prevents the operation from being more efficient. TOC offers methodologies that are specifically developed to identify and manage constraints to enable the operation to achieve its goals. Students will be taught the skills required for the identification and management of constraints within an operation system. Pr.: MANGT 420, 421, and 521.

MANGT 653. Business Project Management. (3) I. This course provides an in-depth coverage of project management concepts and methodologies required for service and manufacturing operations. Topics to be covered include, but are not limited to: project selection and evaluation, project dynamics, motivation and evaluation of project team members, project scheduling, project budgeting, and project closure. Pr.: MANGT 420 and 421.

MANGT 656. Systems Analysis. (3) I, II, S. An in-depth study of systems analysis techniques viewing information systems as an integral component of organizational strategic planning. Emphasis on systems planning, use of CASE tools, process and data modeling, quality and systems reengineering. Pr.: MANGT 366 or 367.

MANGT 661. Logistics and Service Operations Management. (3) II, in odd years. This course addresses the characteristics of logistics management and service operations management from the aspects of storage and delivery of goods to the customer. Recognition is given to the interrelationships of operations and other functional in the process of running operations.

MANGT 666. Applications of Data Models in Business. (3) I, S. Examination of interrelationship between managers and database designers from the user's perspective. Database design strategies for the functional areas of business such as accounting, marketing, and manufacturing management with a focus on making data responsive to changing information needs and supportive of organizational plans and goals. Pr.: MANGT 367.

MANGT 670. Systems Design. (3) II. Application of fundamental concepts learned in introductory systems analysis course. Focus on the application and integration of different design methodologies using CASE tools, a structured programming language, and various structured design techniques. Pr.: MANGT 656 and 666.

MANGT 676. Management of Local Area Networks. (3) I, II. Study of telecommunications and its impact on business organizations. Coverage of networking models, hardware, software, distributed systems, and standards issues. Emphasis on Local Area Networks (LANs) and hands-on project management. Pr.: MANGT 367.

MANGT 686. Data Administration. (3) I. Study of the interrelationship of organizational information systems and the databases that support managerial decision making. The analytical/programming tools used to perform the data administration function will be implemented through realistic case settings. Pr.: MANGT 656 and MANGT 666.

MANGT 690. International Management. (3) On sufficient demand. Examination of business decision parameters and strategy in a multinational context. The influence of cultural, economic, political, and social differences on decision making and the operation of American enterprises in the international environment. Pr.: FINAN 450, MANGT 420, MKTG 400, or FINAN 710.

Marketing and International Business

David M. Andrus,* Head

Professor Andrus;* Associate Professor Laughlin;* Assistant Professors Chen, Janda*, Joiner,* Schmidt,* and Trocchia;* Instructors Fallin, Martin, and Thierer;* Emeritus Professor Coleman.*

Study in marketing covers such areas as consumer behavior, marketing strategy, marketing research, international marketing, retailing, personal selling, sales management, business marketing, and marketing management. This background provides individuals with excellent opportunities for rapid advancement in professional marketing positions in organizations. Dual degree and dual major programs combining marketing and international business with other fields may be arranged by consulting the Department of Marketing and International Business office.

Requirements for major

BAPP program **60**

Business core courses **24**

FINAN 450	Introduction to Finance	3
MANGT 420	Management Concepts	3
MANGT 421	Introduction to Operation Management	3
MANGT 466	Management Information Systems	3
MANGT 595	Business Strategy	3
MANGT 596	Business, Government, and Society	3
MKTIB 400	Marketing	3
STAT 351	Business and Economic Statistics II	3

Major field **21**

MKTIB 450	Consumer Behavior	3
MKTIB 544	International Marketing	3
MKTIB 642	Marketing Research	3
MKTIB 690	Marketing Management	3

Plus 9 hours from:

MKTIB 442	Personal Selling	3
MKTIB 541	Retailing	3
MKTIB 542	Sales Management	3
MKTIB 543	Integrated Marketing Communications	3
MKTIB 545	Marketing Channels	3
MKTIB 546	Services Marketing	3
MKTIB 547	International Business	3
MKTIB 550	Business Marketing	3

Economics electives **6**

One *must* be selected from the following five courses:

ECON 510	Intermediate Macroeconomics
ECON 520	Intermediate Microeconomics
ECON 530	Money and Banking
ECON 540	Managerial Economics
ECON 681	International Trade

The second elective may be selected from the first five or from the following:

ECON 555	Urban and Regional Economics
ECON 631	Principles of Transportation
ECON 633	Public Finance
ECON 682	Economics of Underdeveloped Countries

Restricted electives **9**

Humanities, natural, quantitative, or social sciences below qualify for restricted electives.

Humanities—See BAPP requirements in this college section.

Natural science—See BAPP requirements in this college section.

Quantitative—All courses in the computing and information sciences department numbered 300 and above; MATH 221 or 222; all statistics courses numbered 500 and above.

Social science—All courses in anthropology, political science, psychology, sociology, and economics, except those used as BAPP requirements or economics electives; all courses in geography, except those listed as natural sciences; DEN 450 Impact of Engineering Technology on Society; ENVD 510 Places and People; FSHS 110 Introduction to Human Development; FSHS 350 Family Relationships and Sex Roles.

Unrestricted electives **6**

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Agribusiness option

Marketing majors interested in agriculture may take an option in agribusiness. Students choosing the agribusiness option complete all requirements for the marketing major plus hours in agribusiness.

Requirements for agribusiness option

BAPP program **62**

Complete the BAPP program with one exception: natural science requirements—9 credit hours; BIOL 198 Principles of Biology (4 hours) and CHM 110 General Chemistry (5 hours)

Business core courses **46**

FINAN 450	Introduction to Finance	3
MANGT 420	Management Concepts	3
MANGT 421	Introduction to Operations Management	3
MANGT 466	Management Information Systems	3
MANGT 595	Business Strategy	3
MANGT 596	Business, Government, and Society	3
MKTIB 400	Marketing	3
MKTIB 450	Consumer Behavior	3
MKTIB 544	International Marketing	3
MKTIB 642	Marketing Research	3
MKTIB 690	Marketing Management	3
STAT 351	Business and Economics Statistics II	3
AGEC 318	Economic Principles of Agricultural Business Firms	3
AGEC 500	Production Economics	3
AGEC 505	Agricultural Market Structure	3

Economics electives **3**

Select one course from the following:

ECON 510	Intermediate Macroeconomics	3
ECON 530	Money and Banking	3
ECON 555	Urban and Regional Economics	3
ECON 631	Principles of Transportation	3
ECON 633	Public Finance	3
ECON 681	International Trade	3

Sixteen hours must be taken from the following three groups of electives:

Agribusiness electives **6**

Select six credit hours from the following:

AGEC 410	Agricultural Policy	3
AGEC 416	Agricultural Law and Economics	3
AGEC 417	Rural Banking	3
AGEC 420	Commodity Futures Marketing	3
AGEC 421	Livestock-Meat Marketing	3
	or	
AGEC 422	Grain Marketing	3
AGEC 513	Agricultural Finance	3
AGEC 515	Agribusiness Marketing	3
AGEC 598	Farm Management Strategy	3
AGEC 525	Natural Resource Economics	3
AGEC 605	Price Analysis and Forecasting	3
AGEC 610	Agricultural and Natural Resources Policy	3
AGEC 615	International Agricultural Development	3
AGEC 623	International Agricultural Trade	3

Agricultural sciences and/or product technology electives **6-8**

Select six to eight credit hours from the following:

AGRON 220	Crop Science	4
	or	
HORT 200	Plant Science	4
AGRON 305	Soils	4
AGRON 340	Grain Grading	2
AGRON 501	Range Management	3
ASI 102	Principles of Animal Science	3
	and	
ASI 105	Animal Science and Industry Lab	1
	or	
ASI 106	Dairy/Poultry Science Lab	1
ASI 300	Principles of Livestock Feeding	3
ASI 302	Introduction to Food Science	3
ASI 305	Fundamentals of Food Processing	3
ASI 350	Principles of Meat Science	3
ASI 361	Meat Processing	2
ASI 405	Fundamentals of Milk Processing	3
ASI 430	Food Products Evaluation	3
ASI 694	Food Plant Management	3
ENTOM 300	Economic Entomology	3
ENTOM 305	Livestock Entomology	3
FN 132	Basic Nutrition	3
FN 301	Trends in Food Products	3
FOR 285	Introduction to Forestry	3
GENAG 500	Food Science Seminar	3
GRSC 100	Principles of Milling	3
GRSC 305	Fundamentals of Food Processing	3
GRSC 120	Introductory Bakery Technology	2
	and	
GRSC 121	Introductory Bakery Technology Lab	1
PLPTH 500	Principles of Plant Pathology	3

Additional agribusiness option electives **2–4**

Select additional courses from agribusiness electives and agricultural sciences and/or product technology electives to total 16 credit hours.

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Marketing courses

◆**MKTIB 400. Marketing.** (3) I, II, S. A general study of marketing principles which lead to the development of marketing strategy. A review of environmental influences and key analytical tools used in formulating marketing plans. Product or service design, distribution, pricing, and promotional programs. Pr.: ECON 110 and 120, junior standing.

MKTIB 442. Personal Selling (3) I, II. Focuses on the nature of interpersonal communications, both oral and written, between buyers and sellers. The mechanics and intricacies of personal sales promotions. Concepts of buyer behavior and communication theory. Students develop selling communications skills through practice. Pr.: MKTIB 400.

MKTIB 450. Consumer Behavior. (3) I, II, S. An examination of consumer motives, attitudes, and decision processes as these relate to product imagery and purchase symbolism. The sociological and psychological foundations of marketplace choice are analyzed, including life-style, social status, age, income, taste, habit, custom, fashion, self-concept, and opinion influences. Pr.: MKTIB 400 and junior standing.

MKTIB 498. Independent Study in Marketing. (Var.) I, II, S. Selected topics in marketing. Pr.: Consent of department head.

MKTIB 541. Retailing. (3) II. This course is designed to introduce the student to the role retailing performs in the distribution of consumer goods and services. This course will survey the retailing environment and incorporate strategic planning from the management point of view; study of retail policies and organizations, merchandise control, personnel management, retail accounting, and expense control. Pr.: MKTIB 400 and 450.

MKTIB 542. Sales Management. (3) II. Management of the sales force in other than retail settings. Involves hiring, screening, recruiting, training, organizing, motivating, supervising, controlling, and evaluating members of the sales force. Also focuses on the development and execution of sales strategies as well as on the mechanics and need for sales forecasting. Pr.: MKTIB 400.

MKTIB 543. Integrated Marketing Communications. (3) I, II. Focuses on the management of promotional programs which include elements of advertising, personal selling, sales promotion, and public relations. Includes a review of concepts from economics, behavioral sciences, and mathematics which play a role in creating, executing, and evaluating promotional programs. Pr.: MKTIB 400 and 450.

MKTIB 544. International Marketing. (3) I, II, S. This course deals with the problems and perspectives of marketing across national boundaries. It also focuses on the tools and practices for structuring and controlling marketing programs related to overseas business. Emphasis is on the management of marketing functions in global context. Topics include international trade organizations, international economic factors, foreign business customs, and the international marketing mix. Pr.: MKTIB 400.

MKTIB 545. Marketing Channels. (3) I. Study of the quantitative and qualitative factors involved in selecting, developing, managing, and controlling marketing channels of distribution. Includes decision models from industrial marketers through purchasing units. Pr.: MKTIB 400.

MKTIB 546. Services Marketing. (3) I. An analysis of the unique marketing challenges faced by service organizations. Major topics include the unique characteristics of services, creating, and positioning a service in the marketplace, distributing, promoting, and pricing services. An evaluation of marketing strategies from the perspective of a service firm. Pr.: MKTIB 400.

MKTIB 547. International Business. (3) I. This course provides students with an appreciation of the opportunities and unique challenges in international business, an understanding of the strategic and operational options available to an international firm, and managerial decision making abilities required to be successful abroad. The course examines strategic and operational issues in management, marketing, accounting, and finance from an international perspective. Pr.: MKTIB 400, ACCTG 241, MANGT 420, FINAN 450.

MKTIB 550. Business Marketing. (3) I. A study of the nature of the industrial marketplace, concentrating on those aspects that differentiate it from the consumer markets. The major topics are analysis of market needs, market segments, organizational buying behavior, purchasing agent functions and activities, marketing strategy and mix for institutional customers, not-for-profit and services marketing, and buyer/seller relations. Pr.: MKTIB 400.

MKTIB 642. Marketing Research. (3) I, II. Designed to acquaint the student with the marketing research literature, concepts, methods, and techniques. The emphasis in this course is on how to actually conceptualize and conduct a marketing research project as well as use research as an aid for marketing management decisions. Topics include the marketing research industry, defining the marketing research problem, research design formulation, data collection, data preparation and analysis, communicating the research project, and international and ethical dimensions of marketing research. Pr.: STAT 351, CIS 101, CIS 102, CIS 103, MKTIB 400 and MKTIB 450.

MKTIB 690. Marketing Management. (3) I, II, S. Analysis of marketing situations which lead to appropriate management of the marketing program's objectives. Capstone course integrates knowledge of marketing and other business management principles into marketing strategy, development, implementation, and control. Pr.: MKTIB 642 and 450 or concurrent enrollment.

Education

Michael C. Holen, Dean.

Janice R. Wissman, Associate Dean
Paul R. Burden, Assistant Dean
Robert C. Newhouse, Assistant Dean
Michael F. Perl, Director, Center for Student and Professional Services and Coordinator of Laboratory Experiences
Candace Bond, Certification Officer and Associate Director, Center for Student and Professional Services

Charles I. Rankin, Director, Midwest Desegregation Center

6 Bluemont Hall
785-532-5525

College of Education programs prepare individuals for the broad spectrum of educational positions.

Primary consideration is given to preparing education students for the various positions in elementary, secondary, occupational, and vocational programs, and the personnel who support these programs. In addition, the college provides consultative services and in-service training for the improvement of various aspects of education programs at all levels.

The College of Education cooperates with all other colleges and departments in its interdisciplinary approach to the preparation of teachers and other educational personnel. This includes participation in cooperative education programs through Career and Employment Services.

The undergraduate teacher education programs are accredited by the Kansas State Department of Education, North Central Association of Colleges and Secondary Schools, and the National Council for Accreditation of Teacher Education.

The College of Education participates in the intercollegiate programs in women's studies and gerontology, described earlier in the Secondary Majors section of this catalog.

Advising

All students admitted to the College of Education are assigned a pre-professional advisor from the Center for Student and Professional Services (13 Bluemont Hall).

When students are admitted to the professional program, generally late in their sophomore or early in their junior year, they are assigned a faculty advisor from the teaching field of study which they have chosen.

Students remain with that faculty advisor throughout the remainder of their program.

University General Education

The College of Education requires 18 credit hours to fulfill the university general education requirements. These 18 credit hours, which must be approved university general education courses from outside of the College of Education, may overlay with the general studies requirements in the humanities, social sciences, and natural sciences.

At least 1/3 (6 credit hours) of the 18 credit hours must be taken in courses numbered 300 or above, and no more than 6 credit hours may be counted in any one field of study toward the required 18 credit hours. For example, no more than 6 hours of ART, or 6 hours of HIST, may be counted toward the 18 hours. All courses must be approved university general education courses.

In course descriptions, university general education courses are marked with a ◆. The Degrees section at the front of this catalog lists other university general education courses. A list of currently offered university general education courses is available on the web at these addresses:
- http://www.ksu.edu/course/
- http://www.ksu.edu.educadv/

Honors Program

The honors program in the College of Education has been established for undergraduate students who have demonstrated high academic achievement. The major purpose of the honors program is to give selected students an opportunity to expand their knowledge of the teaching profession and to acquire a desire to be leaders in the profession. The program is designed for students in the College of Education and other students who are completing a teacher certification program through another college at K-State.

Participants may expect to receive recognition of academic ability and achievements; learn and interact with other honor students in small groups; establish close association with faculty members in seminars and research projects; exercise creativity and explore leadership responsibilities; and have alternatives to selected required courses in the professional education component.

Admission requirements

1. Present a written statement of interest in the program.
2. Submit an ACT Composite score of 28 or higher or evidence of a cumulative grade point average of 3.5 in a minimum of 9 semester hours of college work.
3. Enroll in the non-credit course DED 010 Introduction to the Honors Program.
4. Have a satisfactory interview with a faculty member of the Honors Program Coordinating Committee.

Student progression after admission

1. Formal admission to the honors program by the Coordinating Committee.
2. Enrollment each semester in DED 020 Honors Program (0).
3. Enrollment in a minimum of two Honors Seminars (DED 320) prior to graduating.
4. Maintenance of a grade point average of 3.5 or better in all college work.
5. Completion of DED 420 Honors Research (1–3), for at least 2 credit hours under the supervision of a professor in the College of Education.

Features of the honors program

Honors seminars are offered each semester. Students will be encouraged to enroll in one seminar each semester although the minimum requirement for the program is two honors seminars. One of the required seminars may be taken in another college at K-State. The seminars will focus on topics that will broaden the knowledge of future teachers and give them insights into leadership responsibilities in their professions.

Honors Research gives students an opportunity to work with professors having similar research interests. Research topics may be selected from a range of areas and they may reflect the student's particular interests.

Support Facilities and Programs

In addition to major instructional and research programs, the College of Education provides service to K-State faculty and students, local schools, and a variety of other entities in the state and region.

Specific services of the College of Education are provided or coordinated through the following centers.

Center for Extended Services and Studies

The center initiates and responds to requests for staff development programs, curriculum studies, staff development needs assessments, program evaluations, and other studies designed to enhance education at all levels and environments. Formalized partnerships have been established through the center to provide technical assistance and leadership to selected education foundations in Kansas.

The center is staffed and maintained through the assignment of faculty and staff in the College of Education and through contracts with faculty from K-State and other professionals as determined by the nature of the project. Coordination of K-State's educational development resources is a major responsibility of this service unit.

Center for Rural Education and Small Schools

Activities designed to address the unique educational needs of small schools and rural communities in Kansas and the plains states are the major focus of this center. Its basic services as ongoing endeavors are in research—to identify unique needs, effective techniques, and decision-making processes—and assistance programs centered on the development, coordination, and delivery of information and services. Development and maintenance of linkages with local schools and state and federal agencies are important functions of the center. A highly successful annual conference on rural education and small schools has attracted national attention and was initiated by the center and the College of Education.

Center for Economic Education

With support from K-State and the Kansas Council on Economic Education, the Center for Economic Education has a mission to improve the quality and increase the quantity of economics instruction in Kansas elementary and secondary schools. Center staff develop and conduct credit and noncredit preservice and inservice programs on economic education and personal finance economics. Teachers are trained and provided with resources to integrate an understanding of economics into other disciplines, including math, language arts, history, science, and other areas. Teachers utilize the center's lending library to enhance economics curriculum development and instruction. The center directs these programs in Kansas: PEP (Personal Economics Program); the Stock Market Game™, an economic simulation sponsored by the Securities Industry Foundation for Economic Education; and LifeSmarts℠, a consumer economic challenge sponsored by the National Coalition for Consumer Education. The center is fully affiliated with the National Council on Economic Education and participates in its EconomicsAmerica programming.

Instructional Media Center

The Instructional Media Center provides a range of services, instructional materials, and audiovisual equipment for faculty and students. Professional-quality materials such as tapes, overhead transparencies, slides, films, and displays are produced for faculty members. Students use the media center to prepare similar materials for use in class projects and in student teaching. Audiovisual equipment of many types is maintained and provided by the center. The instructional materials collection includes films, filmstrips, slides, and tapes used in teacher education.

The Instructional Media Center includes a full range of computers and computer services for use in instructional media classes and for independent use. The facilities include computers with a variety of word processing, database, and spreadsheet programs. Programs and equipment are also available for multimedia presentations with the use of hypermedia and other representation capabilities and also for desktop publishing. Portable workstations with most computer functions are available for use in other classrooms.

A video recording studio is used in the production of instructional television recordings. The Instructional Media Center also includes an outstanding audio recording studio. These studios accommodate production and reproduction of a variety of recorded teaching and individual study materials.

Facilities are available for group and individual uses of instructional media, including rooms for group viewing of films and video tapes, and an independent development laboratory for the individual use of instructional materials. The laboratory includes learning spaces with all materials and equipment needed for totally individualized instruction.

Center for Science Education

Administratively housed in the College of Education, the Center for Science Education is a university-wide vehicle for marshalling and coordinating K-State's historically independent and compartmentalized endeavors in science, mathematics, technology, and environmental education. Groups of faculty affiliates specializing in science, mathematics, computer science, educational technology, and environmental education from across the K-State campus come together to address teaching and learning issues.

The center's mission is to improve the quality of science, mathematics, and technology teaching and learning throughout Kansas and the prairie states from kindergarten through the Ph.D. level. The center facilitates collaboration among individuals and units on and off campus for the purpose of conducting research; developing curriculum materials, pedagogical strategies, and organizational mechanisms; demonstrating their effectiveness in model school sites; and disseminating the latest knowledge to an audience of school administrators, teachers, researchers, and other professionals in related organizations and non-formal educational settings.

Teacher Education

The College of Education is the designated authority for all K-State teacher certification recommendations to the Kansas State Department of Education. All certification programs offered by K-State have been approved by the Kansas State Department of Education.

The programs are designed to develop competencies essential for teaching. Some programs are parts of degree requirements in colleges other than the College of Education. All College of Education program requirements are subject to revision as necessary to meet Kansas certification standards. Students should contact their advisors or the certification officer if they have questions about certification program changes.

Certification through the teacher education program is available for three teaching levels: early childhood education prepares for preschool teaching, birth to K; elementary education prepares for grades K–9; and secondary programs satisfy state certification requirements for grades 7–12.

Elementary education majors may add endorsements to teach at the middle level in English, mathematics, science, and social studies. Secondary majors may add an endorsement to teach at the middle level in family and consumer sciences.

Admission requirements

The application for admission to a teacher education program must be filed when the applicant has satisfied all of the admission requirements. Transfer students who have satisfied all the admission requirements should apply at the time of initial enrollment.

Students making changes in degree programs must reapply for teacher education.

Hours

Fifty total hours must be completed, including all transfer and K-State credits. Thirty-five of the fifty hours constitute a designated core of general education requirements.

English composition

Both Expository Writing I and II must be completed satisfactorily with a grade no lower than C (2.0).

Public speaking
A grade of C or better is required in SPCH 105, 106, or 109. Students may complete the requirement with the quiz-out conducted by the speech department. Courses in interpersonal communication do not apply.

Quantitative sciences
A grade of C or better is required in six credit hours of mathematics including college algebra, or a higher level of mathematics and a statistics course or a course that includes statistics.

Overall GPA
A 2.5 GPA is required in all college work attempted, including transfer and K-State credits.

A 2.75 grade point average is required on a 35 hour general education core which is specified by each department. Students should consult with their advisors or inquire in 13 Bluemont Hall for specific requirements.

Teaching specialty GPA
For all majors except elementary education, a 2.5 GPA is required in all college work attempted in the teaching specialty at other institutions and at K-State.

Pre-professional skills tests
A transfer student may be admitted *provisionally* before the test is taken, but the student must take the test with passing scores the next time it is given on campus or he or she will be dropped from teacher education. Tests will be given throughout the year on dates specified by the testing service and will include sections on reading, writing, and mathematics. A score of 172 in writing, 173 in reading, and 174 in mathematics are required for admission to teacher education.

Early field experience
Early field experience is completed in DED 102 for students in secondary education and in EDEL 300 for students in elementary education.

Application deadlines

To pre-enroll for summer or fall professional classes	February 15
To pre-enroll for spring professional classes	October 1

When the applications are approved, students are notified of their acceptance into the respective teacher education professional program and are reassigned from a pre-professional advisor to a professional-level advisor. Students who do not meet the requirements will be notified of the options available to them.

Professional semester

The professional semester comprises a series of prescribed courses that allocate three-fourths or more of the semester to teaching participation (student teaching). This semester usually occurs in the fall or spring of the senior year. There is no teaching participation experience offered during summer sessions.

Because of the school districts' schedules, students may be required to begin their student teaching before the start of K-State's semester schedule and/or end their student teaching after K-State's semester schedule ends.

Students desiring to be recommended for certification by K-State must earn credit for teaching participation in residence. Students who have had any secondary methods course at another college or university will be required to audit the equivalent course at K-State.

Students may only take the courses prescribed for the professional semester unless permission is obtained through the Office of the Coordinator of Laboratory Experiences. Teaching participation is graded Credit/No Credit.

Application for student teaching
The application for student teaching must be submitted to the College of Education coordinator of laboratory experiences not later than December 20 of the year preceding the professional semester.

Students must submit the application by this deadline even though all admission requirements to the professional semester are not fully satisfied.

Instructions for completing the application can be obtained from the coordinator of laboratory experiences. The application is actually made through the World Wide Web. Junior and senior transfer students from other educational institutions should file the application immediately upon enrollment.

Admission to the professional semester
Students will be approved for the professional semester when the requirements listed below have been met. If notified that all requirements for the professional semester have not been satisfied, students may request through the College of Education advisor that the application be postponed.

Requirements for all applicants to the professional semester
Full admittance to a teacher education program.

Completion of 90 semester hours.

An overall grade point average of 2.5 in all college or university course work attempted.

Physical examination by the student health center or by a licensed physician. The student verifies to the coordinator of laboratory experiences that the physical examination has been completed.

Additional requirements for elementary majors
Completion of EDCEP 315, EDSP 324, EDCIP 455, and Blocks A and B.

Students must have a B average (3.0 GPA) in all Block A and B courses with no grade lower than a C in any blocked course. Students may retake blocked methods courses one time only.

Since the five elementary education methods courses of science, language arts, social studies, mathematics, and reading are offered only in Blocks A and B with field experiences attached, none may be transferred from another institution. EDEL 220 Orientation to Elementary/Middle Schools must be taken at K-State.

Additional requirements for secondary majors
A grade point average of 2.5 in all teaching fields based on all teaching field courses attempted at K-State and at all colleges or universities attended. Completion of Blocks I and II, and EDCIP 310 and EDETC 318 are required.

Student teaching assignment request
All student teaching options require a special application called the Student Teaching Assignment Request. Instructions for completing the application can be obtained from the office of the coordinator of laboratory experiences.

September 25 for students participating in the spring professional semester.

February 25 for students participating in the fall professional semester.

Should either of these dates fall on a Saturday, Sunday, or holiday, the next working day will be considered as the due date.

Professional semester option
In addition to the conventional professional semester, the following option is available:

MITEC option
There is a Multi-Institutional Teacher Education Center in Kansas City. It includes Kansas City, Kansas, and the suburban area. The MITEC option is a voluntary, full-semester, off-campus program. This professional semester option requires advanced planning with the education advisor and the coordinator of laboratory experiences. Students must make special requests for this program.

Interruption of degree

The following College of Education policy regarding interruption of academic programs applies to all people seeking teacher certification as well as those enrolled in degree programs in the College of Education.

Students who graduate within six years from the time they enter K-State without having previously earned credit from another institution shall have the opportunity to graduate under the academic program (course and total credit requirements) in existence at the time of entrance, unless the student cannot be certified by the state of Kansas under the original entry requirements.

If more than six years have elapsed since original entry, the student will need to complete the degree or teacher education program requirements in existence at the time he or she re-enters the university for the final and uninterrupted phase of the program.

This policy applies to students who are admitted to the university with previously attained credit as follows:

	Allowed for completion
Less than 30 credits	6 years
30 to 59 credit	5 years
60 to 89 credits	4 years
90 or more credits	3 years

Due to the number of credit hours required in their program, music education students will have an additional semester, for a total of 6½ years, to complete their teacher education program.

Most students who interrupt their educations for military service during peacetime do so by voluntary enlistment. In such a case, the above policy would hold. In wartime or national emergency, students with good grade records might be drafted. In these cases, it would be expected that students could graduate under the requirements that existed at the time they originally entered unless certification requirements have changed, whereupon the student must modify the entry program to include the current certification requirements.

Professional certification

Initial certification

The College of Education has the responsibility to serve as the recommending agent for all K-State graduates who wish to qualify for certification. The degrees earned in the College of Education in elementary education and in secondary education will fulfill certification program requirements in the state of Kansas. Early childhood, elementary, and secondary teaching certification may be accomplished through the completion of the approved program and the appropriate degree.

Students who do not apply for the initial certification when they are eligible will be expected to meet the requirements in effect at the time they do apply for initial certification. Students enrolled in and earning degrees in colleges other than the College of Education must complete all requirements of an approved teacher education program.

The state of Kansas will issue initial teaching certificates only to individuals who have completed an approved teacher education program, received the recommendation of their college or university, and successfully passed the precertification examination. This examination consists of the three sections of the Pre-Professional Skills test and the Professional Knowledge section of the National Teachers Examination. These tests will be administered at K-State several times each academic year.

The state of Kansas may not issue a teaching certificate to any applicant who has been convicted of a felony or who has had a teaching certificate revoked in another state.

People seeking initial certification who present degrees from other accredited institutions must meet all requirements of the teacher education program. For additional information, these individuals should contact the Office of Certification, 13 Bluemont Hall.

Additional certification endorsements

K-State will recommend for certification those individuals who are already certified, but who are adding an endorsement to the certificate (e.g., reading specialist, administrator, counselor, an additional teaching area, middle-level teaching in selected fields). K-State may become the recommending agent for individuals presenting degrees from other accredited institutions. Generally, these persons must complete 8 hours in residence.

Recertification

Renewal applications not requesting an additional certification endorsement are sent directly to the Kansas State Department of Education.

For additional information on precertification testing, applications, or procedures, contact the Office of Certification in 13 Bluemont Hall.

Approved programs

All students preparing to be certified to teach in preschool, elementary, or secondary schools must fully complete the approved teacher education program regardless of which college awards the degree. The approved program consists of: general education studies, a major or specialization, and professional education studies.

The curricula in elementary education and in secondary education fulfill program requirements for teacher certification in the state of Kansas. Both degrees offered through the College of Education are four-year programs.

Elementary Education Program

Bachelor of science in elementary education
Minimum of 129 hours required
Certification K–9

General education requirements

(53 hrs. minimum)

Communications (8–9 hrs.)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3

Humanities (12 hrs.)

(Recommended courses are available from 13 Bluemont Hall.)

Literature		3
ENGL 355	Literature for Children	3
Humanities		3
Fine arts		3

Social science (12 hrs.)

History: Choose from HIST 100, 101, 102, 251, 252, 531, 553.

Geography: Choose from GEOG 100, 310, 399, 440, 500.

Non-Western cultures: ANTH 204, AMETH 160, or at least three hours from cultures outside Western tradition, excludes those dealing with Greek, Roman, Western Europe, or North America.

Restricted elective: Three hours from the Departments of Anthropology (except ANTH 280 or 281), Economics, Psychology, History, Political Science, Sociology, or Geography (except GEOG 220 or 221).

Natural science (12 hrs.)

(Recommended courses are available from 13 Bluemont Hall.) Each area must include a lab.

- Biological
- Physical
- Earth science

Quantitative sciences (9 hrs.)

MATH 100	College Algebra*	3
MATH 160	Introduction to Contemporary Mathematics*	3
	or	
STAT 320	Elements of Statistics*	3
MATH 320	Math for Elementary School Teachers I	3

*Grade of C or better required.

Pre-professional entry level

For the freshman and sophomore years, or until requirements for admission to teacher education have been satisfied, students in the College of Education will enroll in the appropriate pre-professional curriculum: elementary (EDPPE) or secondary (EDPPS). These students are advised by a College of Education pre-professional advisor in 13 Bluemont Hall concerning the courses essential for entry into the teacher education program.

Students transferring to K-State after earning credit at another institution will be enrolled in a pre-professional program until it has been determined that requirements for admission to teacher education have been satisfied. Students attending community colleges are encouraged to plan their degree programs in a four-year sequence. The College of Education invites students to seek advice from the Center for Student and Professional Services in 13 Bluemont Hall concerning course selections.

Professional-level courses (44 hrs.)

All students must file an application for admission to the teacher education program. When a student's application has been approved, he or she is admitted to the professional level and assigned to a professional-level advisor.

Admission to teacher education is not required for enrollment in the following.

EDEL 220	Orientation to Elementary/ Middle School	1
FSHS 110	Introduction to Human Development	3
FSHS 200	Sexuality and Health	2
EDEL 300	Principles of Elementary Education	3
ART 425	Art for Elementary Schools	3
MUSIC 405	Music for Elementary Teachers	3
EDEL 379	Elementary/Middle-Level Physical Education Methods	2
EDETC 318	Instructional Media and Technology	2

Admission to teacher education is required for enrollment in the following courses. EDCEP 315 may be taken before or concurrently with Block A. EDSP 324 and EDCIP 455 may be taken anytime after admission to teacher education but before student teaching.

EDCEP 315	Educational Psychology	3
EDSP 324	Exceptional Child in the Regular Classroom.	3
EDCIP 455	Teaching in a Multicultural Society	2

Block A

Block A must be taken before Block B.

EDEL 470	Elementary/Middle-Level Science Methods	3
EDEL 473	Elementary/Middle-Level Mathematics Methods	3
EDEL 420	Block A Clinical Experience	1

Block B

EDEL 474	Elementary/Middle-Level Reading Methods	3
EDEL 471	Elementary/Middle-Level Language Arts Methods	3
EDEL 472	Elementary/Middle-Level Social Studies Methods	3
EDEL 430	Block B Practicum	1

Professional semester (16 hrs.)

Requirements for admittance to student teaching: Minimum 3.0 GPA in all Block A and Block B courses, with no grade lower than a C in any blocked course. Students may re-take blocked methods courses one time only.

EDEL 585	Teaching Participation in the Elementary School (with seminar)	16

Area of concentration (15 hrs.)

The 15 hours selected in the area of concentration are in addition to those taken to meet general education requirements. Guidelines for applicable courses are available in the Center for Student and Professional Services. Concentrations are offered in the following fields: art, biological science, communication arts, dance, English, family studies, general science, health education, mathematics, modern foreign languages, music, physical science, social science, special education, and speech pathology.

Minimum hours required in the area of concentration	15
Total credit hours required for graduation	**129**

Middle-level endorsement

An endorsement to teach at the middle level grades in the fields of English, mathematics, science, and social studies may be added to the elementary education program. See your advisor for information on specific requirements.

English as a second language endorsement

An endorsement for English as a second language for grades K–9 may be added to the elementary education program. See your advisor for information on specific requirements.

Secondary Education Program

Bachelor of science
Minimum of 126 hours required
Certification grades 7–12

All students wishing to teach in secondary schools must fully complete the approved teacher education program regardless of which college awards the degree. The approved program consists of: general education studies, professional education studies, and teaching field studies as specifically outlined in the following sections.

General education requirements

Communications (8–9 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
	or	
SPCH 109	Oral Communication Honors	3

Humanities (9 hours)

Literature

Any department of English literature (except ENGL 230, 231, 233, 234, 355, or 545) or Department of Modern Languages literature course ... 3

Fine arts appreciation

Any nonperformance appreciation class in the Departments of Art, Music, Speech (theater or dance courses), or university general education approved courses from the College of Architecture, Planning, and Design ... 3

Restricted elective

Any course offered in the Department of Philosophy (except PHILO 110 or 220) or SPCH 320, 330, or 434, or any course in a modern language, or ENGL 230, 231, 233, or 234 ... 3

Social science (9 hours)

History

Any course from the Department of History ... 3

Non-Western cultures

Recommended: ANTH 204; additional courses are available in ANTH, ECON, GEOG, HIST, POLSC, and SOCIO. See your advisor for approved courses ... 3

Restricted elective

Any course in the Departments of Anthropology (except ANTH 280 and 281), Economics, Geography, (except GEOG 220 and 221), History, Political Science, Psychology, or Sociology ... 3

Natural science (7 hours)

One lab required.

Quantitative sciences (6 hours)

(College Algebra is a prerequisite for statistics and computer science.)

MATH 100	College Algebra (or higher level math course) (Grade of C or better)	3
STAT 320	Elements of Statistics (or higher level statistics course) (Grade of C or better)	3

General education electives (6 hours)

49

Professional education requirements

Pre-professional education

Required for admission to teacher education and prerequisite for Block I.

DED 102	Teaching as a Career	1
FSHS 110	Introduction to Human Development	3

Non-blocked courses—These courses must be taken prior to or concurrent with Block I.

EDCIP 310	Foundations of Education	3
EDETC 318	Instructional Media and Technology	2

Block I—Admission to teacher education required. Courses must be taken concurrently and are a prerequisite for Block II.

EDCEP 315	Educational Psychology	3
EDSP 323	Exceptional Students/ Secondary School	2
EDSEC 376	Core Teaching Skills and Lab	3

Block II—Courses must be taken concurrently and are a prerequisite for Block III.

EDSEC 476	Content Area Methods/ Secondary School	2
EDSEC 477	Middle Level/Secondary Reading	2
EDSEC 420	Content and Reading Methods Lab	1

Block III—Courses must be taken concurrently.

EDCIP 455	Teaching in a Multicultural Society	1
EDCEP 525	Interpersonal Relations in the School	1
EDSEC 586	Teaching Participation/ Secondary School	12
		36

Electives

Hours will vary with majors

Total credit hours required for graduation ... 126

Secondary Education Teaching Fields

Agricultural education

For agricultural education requirements, see the section on secondary education programs outside the College of Education.

Art education (EDART)

Students preparing for K–12 certification must complete ART 425 Art for Elementary Schools and student teaching on both the elementary and secondary levels.

ART 100	2D Design	3
ART 190	Drawing I	3
ART 195	Survey of Art History I	3
ART 196	Survey of Art History II	3
ART 200	3D Design	3
ART 210	Drawing II	3
ART 220	Water Color I	3
ART 245	Painting I	3
ART 265	Ceramics I	3
ART 270	Metalsmithing and Jewelry	3
ART 295	Photography in Art	3
ART 376	Studio Art Exploration	3
ART 545	Twentieth Century Art History I	3
ART 690	Techniques in Teaching Art	2
Three additional art studio hours that build on prior course experience in that area		3
		44

Business education (EDBUS)

ACCTG 231	Accounting for Business Operations	3
ACCTG 241	Accounting for Investments and Finances	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MKTG 400	Marketing	3
GENBA 391	Administrative Communications	3
EDSEC 215	Information Processing	3
EDSEC 315	Administrative Data Applications	3
EDSEC 415	Administrative Support Services and Technology	1
EDSEC 416	Office Management	3
ECON 530	Money and Banking	3
	or	
FINAN 450	Introduction to Finance	3

Select one of the following:

FINAN 460	Insurance	3
MANGT 440	Entrepreneurship	3
MANGT 466	Management Information Systems	4

Option A: Computer literacy ... 8

CIS 300	Algorithms and Data Structures	3
	or	
EDETC 723	Logo and Problem Solving	3
EDETC 718	Microcomputers in Instruction	2
EDETC 719	Microcomputers in Instruction Lab	1
EDETC 476	Content Area Methods in the Secondary School: Computers	2

Option B: Vocational office education ... 7

EDSEC 611	Coordination Techniques	1
EDSEC 612	Job Analysis	1
EDSEC 620	Principles and Philosophy of Vocation Education	3
EDSEC 701	Administration and Supervision of Vocational Education	2

Option C: Accounting ... 6

ACCTG		3
ACCTG		3

Supporting courses required

ECON 110	Principles of Macroeconomics	3
ECON 120	Principles of Microeconomics	3
CIS 101, 102, 103, and 104	Introduction to Information Technology and Microcomputers	4

CIS 200	Fundamentals of Computer Programming	3

Select one of the following:

FSHS 105	Introduction to Personal and Family Finance	3
FSHS 400	Family Economics	3
FSHS 405	Advanced Personal and Family Finance	3
		56–59

English (EDENG)

Two of the following four survey courses:

ENGL 361	British Survey I	3
ENGL 362	British Survey II	3
ENGL 381	American Survey I	3
ENGL 382	American Survey II	3

Required:

ENGL 252	Introduction to Literary Studies	3
ENGL 350	Introduction to Shakespeare	3
ENGL 400	Advanced Expository Writing for Prospective Teachers	3
ENGL 430	The Structure of English	3
ENGL 490	Development of the English Language	3
ENGL 545	Literature for Adolescents	3
ENGL	World literature	3
ENGL	Literature electives at 600 level and above	6
ENGL	Composition elective (may include ENGL 500, 761, or 763)	3
PSYCH 650	Psychology of Language	3
		45

English/journalism (EDENJ)

Two of the following:

ENGL 361	British Survey I	3
ENGL 362	British Survey II	3
ENGL 381	American Survey I	3
ENGL 382	American Survey II	3

Required:

ENGL 252	Introduction to Literary Studies	3
ENGL 350	Introduction to Shakespeare	3
ENGL 430	The Structure of English	3
ENGL 490	Development of the English Language	3
ENGL 545	Literature for Adolescents	3
ENGL	A world literature course	3
Literature elective above 600 level		3
MC 235	Mass Communication in Society	3
MC 400	News and Feature Writing	3
MC 430	Photography I	3
MC 440	Editing and Design	3
MC 565	Law of Mass Communications	3
MC 605	Supervision of School Publications	3
PSYCH 650	Psychology of Language	3
		48

Family and consumer sciences education

For family and consumer sciences education requirements, see the section on secondary education programs outside the College of Education.

Journalism (EDJOR)

MC 235	Mass Communication in Society	3
MC 400	News and Feature Writing	3
MC 430	Photography I	3
MC 440	Editing and Design	3
MC 565	Law of Mass Communications	3
MC 605	Supervision of School Publications	3

Electives (Recommended courses) (12 hours):

MC 320	Principles of Advertising	3
MC 360	Publications Practice	1–4
MC 410	Writing for the Electronic Media	3
MC 470	Audio I	3
	or	
MC 480	Video I	3
MC 500	Advanced News and Feature Writing	3
MC 510	Yearbook Editing and Management	2
MC 540	Advanced Editing and Design	3
MC 555	Advertising Techniques	3
MC 710	History of Journalism	3
MC 720	Ethics in Mass Communications	3
		30

Mathematics (EDMTH)

MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
MATH 222	Analytic Geometry and Calculus III	4
MATH 240	Elementary Differential Equations	4
MATH 312	Finite Application of Mathematics	3
MATH 511	Introduction to Algebraic Systems	3
MATH 570	History of Math	3
MATH 572	Foundations of Geometry	3

Approved mathematics courses numbered 400–799 (6 hours) (Recommended courses):

MATH 510	Discrete Math	3
MATH 520	Foundations of Analysis	3
MATH 551	Applied Matrix Theory	3
MATH 591	Topics of Secondary School Teaching	3

Supporting courses required:

STAT 320	Elements of Statistics	3
	or	
STAT 510	Introductory Probability and Statistics I	3
CIS 200	Fundamentals of Computer Programming	4
		41

It is recommended that a course in physics be included as part of general education.

Modern languages (EDMLA)

Modern language majors must demonstrate proficiency in speaking and understanding the foreign language during the semester preceding student teaching by making a satisfactory score on the Modern Language Department Oral Proficiency Interview. The interview is conducted by members of the modern language department faculty by arrangement with each individual. Students should contact the modern language education advisor for additional information.

French

30 hours at 200 level or above to include the following:

FREN 211	French III	4
FREN 213	French IV	3
FREN 214	French Conversation IVA	2
FREN 511	Masterpieces of French Literature I	3
FREN 512	Masterpieces of French Literature II	3
FREN 513	French Composition and Grammar	3
FREN 514	French Civilization	3
FREN 719	Advanced Spoken and Written French	3
FREN	French electives at 500 and above	6
		30

German

30 hours at 200 level or above to include the following:

GRMN 221	German III	4
GRMN 223	German IV	3
GRMN 224	German Conversation IVA	2
GRMN 521	Introduction to German Literature I	3
GRMN 522	Introduction to German Literature II	3
GRMN 530	German Civilization	3
GRMN 731	Advanced Spoken and Written German	3
GRMN	German electives at 500 and above	9
		30

Spanish

30 hours at 200 level or above to include the following:

SPAN 261	Spanish III	4
SPAN 263	Spanish IV	3
SPAN 264	Elementary Spanish Conversation IVA	2
SPAN 563	Introduction to the Literature of Spanish America	3
SPAN 564	Spanish Composition and Grammar	3
SPAN 565	Spanish Civilization	3
	or	
SPAN 566	Hispanic-American Civilization	3
SPAN 567	Introduction to the Literature of Spain	3
SPAN 571	Advanced Spanish Conversation	3
SPAN	Spanish electives at 500 and above	6
		30

Certification to teach elementary school foreign language is an optional extension of secondary school certification. The following must be added to the requirements for secondary modern foreign language certification if elementary foreign language certification is desired:

EDEL 502	Foreign Language Elementary School Practicum	1
EDEL 720	Foreign Language Methods for Elementary Schools (offered spring of even years)	3

Natural sciences

Biological science (EDBSC)

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOL 410	Biology of the Cancer Cell	2
BIOL 455	General Microbiology	4
BIOL 303	Ecology of Environmental Problems	3
	or	
BIOL 529	Fundamentals of Ecology	3
ASI 500	Genetics	3
	or	
BIOL 400	Human Genetics	3

Eight hours of biology electives. Many different biology courses may be used but it is suggested that the following courses be considered:

ENTOM 312	General Entomology	2
ENTOM 313	General Entomology Laboratory	1
BIOL 310	Bioethics	3
BIOL 510	Embryology	3
BIOL 540	Molecular Biology	3
BIOL 620	Evolution	3

Chemistry courses required:

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Lab	2

Other required courses:

GEOL 103	Geology Laboratory	1
GEOL 512	Earth Science	3
PHYS 115	Descriptive Physics	4
PHYS 191	Descriptive Astronomy	3
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
MATH 312	Finite Applications of Math	3
STAT 320	Elements of Statistics	3
EDSEC 614	Lab Techniques in Teaching Science	3
		68

Chemistry (EDCHM)

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
CHM 371	Chemical Analysis	4
CHM 500	General Physical Chemistry	3
CHM	Chemistry electives	5

Supporting courses required:

BIOL 198	Principles of Biology	4
GEOL 100	Earth in Action	3
GEOL 103	Geology Lab	1
MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
MATH 222	Analytic Geometry and Calculus III	4
	or	
MATH 312	Finite Applications of Math	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
PHYS 191	Descriptive Astronomy	4
STAT 320	Elementary Statistics	3
EDSEC 614	Laboratory Techniques in Teaching Science	3
		61–62

Additional course recommended:

CHM 799	Problems in Chemistry	Var.

It is highly recommended that additional courses be selected to fulfill requirements for an additional teaching area in biology or physics. The course selection should be made in consultation with the science education advisor.

Earth science (EDESC)

GEOL 100	Earth in Action	3
GEOL 102	Earth Through Time	3
GEOL 103	Geology Laboratory	1
GEOL 105	Oceanography	3
GEOL 301	Historical Geology Lab	1
GEOL 502	Mineralogy	3
GEOL 520	Geomorphology	2

Supporting courses required:

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
GEOG 220	Environmental Geography I	4
GEOG 221	Environmental Geography II	4
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
MATH 312	Finite Applications	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
PHYS 191	Descriptive Astronomy	3
STAT 320	Elementary Statistics	3
EDSEC 614	Laboratory Techniques in Teaching Science	3
		67

It is highly recommended that additional courses be selected to fulfill requirements for an additional teaching area in biology, physics, or chemistry. The course selection should be made in consultation with the science education advisor.

Physical science (EDPSC)

PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
PHYS 191	Descriptive Astronomy	3
PHYS 452	Contemporary Physics	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
CHM 371	Chemical Analysis	4
GEOL 100	Earth in Action	3
GEOL 102	Earth Through Time	3
GEOL 103	Geology Laboratory	1
GEOL 105	Oceanography	3
GEOL 301	Historical Geology Lab	1
GEOL 502	Mineralogy	3
	or	
GEOL 520	Geomorphology	2
GEOG 220	Environmental Geography I	4

Supporting courses required:

BIOL 198	Principles of Biology	4
MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
MATH 222	Analytic Geometry and Calculus III	4
	or	
MATH 312	Finite Applications of Math	3
STAT 320	Elementary Statistics	3
EDSEC 614	Laboratory Techniques in Teaching Science	3
		70–72

Physics (EDPHY)

PHYS 122	Computation and Experimentation in Physics	3
PHYS 191	Descriptive Astronomy	3
PHYS 223	Physics I: Mechanics and Thermodynamics	5
PHYS 224	Physics II: Electromagnetism and Sound	5
PHYS 325	Physics III: Relativity and Quantum Physics	3
PHYS 506	Physics Laboratory	3
PHYS 522	Mechanics I	3
PHYS 532	Electricity and Magnetism I	3
PHYS 636	Physical Measurements Lab	4

Supporting courses required:

BIOL 198	Principles of Biology	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
GEOL 103	Geology Laboratory	1
GEOL 100	Earth in Action	3
	or	
GEOL 512	Earth Science	3
MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
MATH 222	Analytic Geometry and Calculus III	4
MATH 240	Series and Differential Equations	4
EDSEC 614	Laboratory Techniques in Teaching Science	3
		67

It is highly recommended that additional courses be selected to fulfill requirements for an additional teaching area in chemistry or mathematics. The course selection should be made in consultation with the science education advisor.

Social sciences

Economics (EDEC)

Courses required:

ANTH 200	Introduction to Cultural Anthropology	3
	or	
ANTH 204	General Education Introduction to Cultural Anthropology	3
ECON 110	Principles of Macroeconomics	3
GEOG 100	World Regional Geography	3
GEOG 200	Human Geography	3
POLSC 110	Introduction to Political Science	3
POLSC 321	Kansas Politics and Government	3
POLSC 325	U.S. Politics	3
SOCIO 211	Introduction to Sociology	3
HIST 101	World Civilization: Rise of Europe	3
HIST 102	World Civilization: Modern Era	3
HIST 251	U.S. History to 1877	3
HIST 252	U.S. History Since 1877	3

Supporting courses:

ECON 120	Principles of Microeconomics	3
ECON 510	Intermediate Macroeconomics I	3
ECON 520	Intermediate Macroeconomics II	3
ECON 530	Money and Banking	3
ECON 536	Comparative Economics	3

Three hours of 500 level or above from economics:

ECON		3

Three hours of 300 level or above from history:

HIST		3
		57

Geography (EDGEO)

Courses required:

ANTH 200	Introduction to Cultural Anthropology	3
	or	
ANTH 204	General Education Introduction to Cultural Anthropology	3
ECON 110	Principles of Macroeconomics	3
GEOG 100	World Regional Geography	3
GEOG 200	Human Geography	3
POLSC 110	Introduction to Political Science	3
POLSC 321	Kansas Politics and Government	3
POLSC 325	U.S. Politics	3
SOCIO 211	Introduction to Sociology	3
HIST 101	World Civilization: Rise of Europe	3
HIST 102	World Civilization: Modern Era	3
HIST 251	U.S. History to 1877	3
HIST 252	U.S. History Since 1877	3

Supporting courses:

GEOG 220	Environmental Geography I	4
GEOG 440	Geography of Natural Resources	3
GEOG 450	Geography of Economic Behavior	3
GEOG 500	Geography of the United States	3

Three hours of 500 level or above from geography:

GEOG		3

Three hours of 300 level or above from history:

HIST		3

Three hours of 300 level or above from economics, history, political science, or sociology:

ECON/HIST/POLSC/SOCIO		3
		57

History (EDHST)

Courses required:

ANTH 200	Introduction to Cultural Anthropology	3
	or	
ANTH 204	General Education Introduction to Cultural Anthropology	3
ECON 110	Principles of Macroeconomics	3
GEOG 100	World Regional Geography	3
GEOG 200	Human Geography	3
POLSC 110	Introduction to Political Science	3
POLSC 321	Kansas Politics and Government	3
POLSC 325	U.S. Politics	3
SOCIO 211	Introduction to Sociology	3
HIST 101	World Civilization: Rise of Europe	3
HIST 102	World Civilization: Modern Era	3
HIST 251	U.S. History to 1877	3
HIST 252	U.S. History Since 1877	3

Supporting course:

HIST 586	Junior Seminar	3

Nine hours of 500 level or above from history distributed in 3 of the following areas:

Ancient medieval and early modern Europe
HIST
Modern Europe including Britain
HIST
The Third World (Asia, Africa, Latin America)
HIST
The United States
History of science, technology, and military history
HIST

Three hours of 300 level or above from economics, geography, political science, or sociology

ECON/GEOG/POLSC/SOCIO		3
		51

Political science (EDPLS)

Courses required:

ANTH 200	Introduction to Cultural Anthropology	3
	or	
ANTH 204	General Education Introduction to Cultural Anthropology	3
ECON 110	Principles of Macroeconomics	3
GEOG 100	World Regional Geography	3
GEOG 200	Human Geography	3
POLSC 110	Introduction to Political Science	3
POLSC 321	Kansas Politics and Government	3
POLSC 325	U.S. Politics	3
SOCIO 211	Introduction to Sociology	3
HIST 101	World Civilization: Rise of Europe	3
HIST 102	World Civilization: Modern Era	3
HIST 251	U.S. History to 1877	3
HIST 252	U.S. History Since 1877	3

Supporting courses:

POLSC 301	Introduction to Political Thought	3
POLSC 333	World Politics	3
POLSC 344	Introduction to Comparative Politics	3
POLSC 400	Inquiry into Politics and Analysis	3

Three hours of 300 level or above from history:

HIST		3

Three hours of 300 level or above from economics, history, geography, or sociology:

ECON/HIST/GEOG/SOCIO		3
		54

Sociology (EDSOC)

Courses required:

ANTH 200	Introduction to Cultural Anthropology	3
	or	
ANTH 204	General Education Introduction to Cultural Anthropology	3
ECON 110	Principles of Macroeconomics	3
GEOG 100	World Regional Geography	3
GEOG 200	Human Geography	3
POLSC 110	Introduction to Political Science	3
POLSC 321	Kansas Politics and Government	3
POLSC 325	U.S. Politics	3

SOCIO 211	Introduction to Sociology	3
HIST 101	World Civilization: Rise of Europe	3
HIST 102	World Civilization: Modern Era	3
HIST 251	U.S. History to 1877	3
HIST 252	U.S. History Since 1877	3

Supporting courses:

SOCIO 440	Social Organization	3
SOCIO 511	Comparative Social Theory	3
SOCIO 520	Methods of Social Research	3
SOCIO 535	Population Dynamics	3
SOCIO 450	Social Interaction	3
	or	
SOCIO 640	Sociology of Family	3

Three hours of 500 level or above from sociology:

SOCIO		3

Three hours of 300 level or above from history:

HIST		3
		57

Speech (EDSPH)

All speech education majors are required to complete 36 hours of speech and theatre courses in addition to SPCH 105 or 106, Public Speaking IA or I.

The following courses are required:

SPCH 325	Argumentation and Debate	3
SPCH 321	Public Speaking II	3
SPCH 330	Rhetoric in Western Thought	3
SPCH 426	Coaching and Directing Speech Activities	3
SPCH	500 level or above in general speech	3
SPCH 322	Interpersonal Communication	3
	or	
SPCH 326	Small Group Discussion	3
THTRE 261	Fundamentals of Acting	3
THTRE 263	Oral Interpretation of Literature	3
THTRE 270	Introduction to Theatre	3
THTRE 368	Fundamentals of Technical Production	3
THTRE 370	Dramatic Structure	3
THTRE	500 level or above in theatre	3
THTRE 565	Principles of Directing	3
MC 235	Mass Communications in Society	3
		42

Optional Secondary Certification Programs

Certification in one or more of these optional programs is available only to students who have successfully completed an approved full certification program in another (first or primary) teaching area.

These optional programs give individuals the opportunity to teach in more than one area. These options lead to full certification in the subject or subject area for grades 7 through 12. A cumulative 2.5 grade point average is required in all courses attempted in the subject or subject area. K-State will recommend an endorsement to the teaching certificate for any additional teaching area when all requirements have been completed, provided all requirements of the approved degree program and the secondary area of certification have also been completed.

Business

EDSEC 215	Information Processing	3
EDSEC 315	Administrative Data Applications	3
EDSEC 415	Administrative Support Services and Technology	1
EDSEC 416	Office Management	3
EDSEC 420	Block II Lab/Business	1
EDSEC 476	Methods of Teaching Business in the Secondary School	2
ACCTG 231	Accounting for Business Operations	3
ACCTG 241	Accounting for Investments and Finances	3
MANGT 390	Business Law I	3
ECON 110	Principles of Macroeconomics	3
ECON 120	Microeconomics	3
ECON 530	Money and Banking	3
	or	
FINAN 450	Introduction to Finance	3
CIS 200	Fundamentals of Computer Programming	4
		35

This prepares a student to teach typing, business law, business economics, bookkeeping, office practice, and data processing.

Computer studies

Computer science component

CIS 101	Introduction to Information Technology	1
CIS 102	Introduction to Micro Spreadsheet Applications	1
CIS 103	Introduction to Micro Database Management	1
CIS 104	Introduction to Micro Word Processing Applications	1
CIS 200	Fundamentals of Computer Programming	4
CIS 300	Algorithmic Processes	3
	or	
EDETC 723	Logo and Problem Solving	3

Professional knowledge component

EDSEC 476	Methods of Teaching in the Secondary School (Computer Studies)	2
EDETC 718	Microcomputers in Instruction	2
EDETC 719	Microcomputers in Instruction Lab	1
		16

English

Select two of the following four courses:

ENGL 361	British Survey I	3
ENGL 362	British Survey II	3
ENGL 381	American Survey I	3
ENGL 382	American Survey II	3

ENGL 350	Introduction to Shakespeare	3
ENGL 400	Advanced Expository Writing for Prospective Teachers	3
ENGL 430	The Structure of English	3
ENGL 490	Development of the English Language	3
ENGL	A world literature course	3
ENGL 545	Literature for Adolescents	3
EDSEC 420	Block II Lab/Language Arts	1
EDSEC 476	Methods of Teaching English in Secondary School	2
PSYCH 650	Psychology of Language	3
		30

English as a second language (7–12)

Secondary education majors may choose to complete course work leading to certification in English as a second language (ESL). Endorsement in ESL can only be achieved in conjunction with the completion of a secondary initial certification program.

To add English as a second language endorsement to a secondary teaching certificate, the following course work is required:

ANTH 200	Introduction to Cultural Anthropology	3
	or	
ANTH 522	Becoming American	3
	or	
DED 560	Introduction to American Ethnic Studies	3
	or	
EDCIP 733	Curriculum Materials for Ethnic Diversity	3
ENGL 600	Principles of Linguistics	3
	or	
EDSEC 786	Topics: General and Applied Issues in Linguistics and Second Language Acquisition (Secondary)	3
EDSEC 476	Methods of Teaching Foreign Language in a Secondary School	3
	and	
EDSEC 420	Methods of Teaching Foreign Language in a Secondary School Lab	1
EDSEC 786	Topics: Assessments and Instruction in ESL	3
	or	
EDSEC 786	Topics: Culturally Competent Assessment and Intervention for the Culturally and Linguistically Different Student (Secondary)	3
EDSEC 786	Topics: Practicum in ESL	3
		16

Journalism

MC 235	Mass Communication in Society	3
MC 400	News and Feature Writing	3
MC 430	Photography I	3
MC 440	Editing and Design	3
MC 565	Law of Mass Communications	3
MC 605	Supervision of School Publications	3
EDSEC 420	Block II Lab/Language Arts	1
EDSEC 476	Methods of Teaching English/Journalism in the Secondary School	2
		21

Health

FN 352	Personal Health	3
FN 132	Basic Nutrition	3
	or	
FN 400	Human Nutrition	3
FSHS 302	You and Your Sexuality	3
FSHS 412	Consumer Rights and Responsibilities	3
BIOL 198	Principles of Biology	4
BIOL 240	Structure and Function of the Human Body	8
PSYCH 202	Drugs and Behavior	2
EDSEC 420	Block II Lab/FCS	1
EDSEC 476	Methods of Teaching Health in the Secondary School	2
EDSEC 576	Safety Education	2
		31

(First aid and CPR certification is also required)

Mathematics

MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
MATH 222	Analytic Geometry and Calculus III	4
MATH 240	Elementary Differential Equations	4
MATH 312	Finite Applications of Mathematics	3
MATH 511	Introduction to Algebraic Systems	3
MATH 570	History of Mathematics	3
MATH 572	Foundations of Geometry	3

Supporting courses required:

STAT 320	Elements of Statistics	3
CIS 200	Fundamentals of Computer Programming	4
EDSEC 420	Block II Lab/Mathematics	1
EDSEC 476	Methods of Teaching Mathematics in the Secondary School	2
		38

A supporting course in physics is recommended.

Modern foreign language

Students seeking modern language endorsement must demonstrate proficiency in speaking and understanding the foreign language during the semester preceding student teaching by making a satisfactory score on the Modern Language Department Oral Proficiency Interview. The interview is conducted by members of the modern language department faculty by arrangement with each individual. Contact the modern language education advisor for additional information.

French

FREN 211	French III	4
FREN 213	French IV	3
FREN 214	French Conversation IVA	2
FREN 511	Masterpieces of French Literature I	3
	or	
FREN 512	Masterpieces of French Literature II	3
FREN 513	French Composition and Grammar	3
FREN 514	French Civilization	3
FREN	French electives at 500 or above	6
EDSEC 420	Block II Lab/Modern Language	1
EDSEC 476	Methods of Teaching Foreign Language in the Secondary School	2
		27

German

GRMN 221	German III	4
GRMN 223	German IV	3
GRMN 224	German Conversation IVA	2
GRMN 521	Introduction to German Literature I	3
	or	
GRMN 522	Introduction to German Literature II	3
GRMN 523	German Composition	3
GRMN 530	German Civilization	3
GRMN	German electives at 500 or above	6
EDSEC 420	Block II Lab/Modern Language	1
EDSEC 476	Methods of Teaching Foreign Language in the Secondary School	2
		27

Spanish

SPAN 261	Spanish III	4
SPAN 263	Spanish IV	3
SPAN 264	Elementary Spanish Conversation IVA	2
SPAN 564	Spanish Composition and Grammar	3
SPAN 565	Spanish Civilization	3
	or	
SPAN 566	Hispanic-American Civilization	3
SPAN	Spanish electives at 500 or above	6
SPAN 563	Spanish-American Masterpieces	3
	or	
SPAN 567	Spanish Masterpieces	3
EDSEC 420	Block II Lab/Modern Lanaguage	1
EDSEC 476	Methods of Teaching Foreign Language in the Secondary School	2
		27

Modern foreign language elementary school

Certification to teach elementary school foreign language is an optional extension of secondary school certification. The following must be added to the requirements for secondary modern foreign language certification:

EDSEC 720	Foreign Language Methods for Elementary Schools (offered spring of even years)	3
EDSEC 502	Foreign Language Elementary School Practicum	1

Natural science

Biology

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOL 303	Ecology of Environmental Problems	3
	or	
BIOL 529	Fundamentals of Ecology	3
BIOL 455	General Microbiology	4
CHM 110/111	General Chemistry/Lab	4
CHM 210	Chemistry I	4
EDSEC 614	Laboratory Techniques in Teaching Science	3
EDSEC 420	Block II Lab/Science	1
EDSEC 476	Methods of Teaching Science in the Secondary School	2
GEOL 100	Earth in Action	3
GEOL 103	Geology Lab	1
PHYS 113	General Physics	4
	or	
PHYS 115	Descriptive Physics	4
PHYS 191	Descriptive Astronomy	3
MATH 100*	College Algebra	3
MATH 150*	Plane Trigonometry	3
MATH 312*	Finite Applications of Math	3
STAT 320	Elements of Statistics	3
		49

*Higher-level math courses may meet this requirement.

Other biology department courses may be considered for meeting the above requirements. It is important that they be approved in advance by a science education advisor.

Chemistry

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 352	General Organic Chemistry Lab	2
CHM 371	Chemical Analysis	4
BIOL 198	Principles of Biology	4
GEOL 100	Earth in Action	3
GEOL 103	Geology Lab	1
PHYS 113	General Physics I	4
	or	
PHYS 115	Descriptive Physics	4
PHYS 191	Descriptive Astronomy	3
EDSEC 614	Laboratory Techniques in Teaching Science	3
EDSEC 420	Block II Lab/Science	1
EDSEC 476	Methods of Teaching Science in the Secondary School	2
MATH 100*	College Algebra	3
MATH 150*	Plane Trigonometry	3
MATH 312*	Finite Applications of Math	3
STAT 320	Elements of Statistics	3
		50

*Higher-level math courses may meet this requirement.

Other natural science courses may be considered for meeting the above requirements. It is important that they be approved in advance by a science education advisor, however, since most science courses are designed to meet the needs of curricula other than the classical natural sciences and would *not* satisfy the requirements.

Earth science or space science

GEOL 100	Earth in Action	3
GEOL 102	Earth Through Time	3
GEOL 103	Geology Laboratory	1
GEOL 105	Oceanography	3
GEOL 301	Historical Geology Lab	1
GEOL 502	Mineralogy	3
	or	
GEOL 520	Geomorphology	2
BIOL 198	Principles of Biology	4
CHM 210	Chemistry I	4
GEOG 220	Environmental Geography I	4
PHYS 113	General Physics I	4
	or	
PHYS 115	Descriptive Physics	4
PHYS 191	Descriptive Astronomy	3
EDSEC 420	Block II Lab/Science	1
EDSEC 476	Methods of Teaching Science in the Secondary School	2
EDSEC 614	Laboratory Techniques in Teaching Science	3
MATH 100*	College Algebra	3
MATH 150*	Plane Trigonometry	3
MATH 312*	Finite Applications of Math	3
STAT 320	Elements of Statistics	3
		50–51

*Higher-level math courses may meet this requirement.

Other geology or physics courses may be considered for meeting the above requirements. It is important that they be approved in advance by a science education advisor.

General science

Core:

BIOL 198	Principles of Biology	4
CHM 110/111	General Chemistry/Lab	4
	or	
CHM 210	Chemistry I*	4
GEOL 100	Earth in Action	3
	or	
GEOL 512	Earth Science	3
GEOL 103	Geology Lab	1
PHYS 113	General Physics I	4
	or	
PHYS 115	Descriptive Physics	4
PHYS 191	Descriptive Astronomy	3
EDSEC 420	Block II Lab/Science	1
EDSEC 476	Methods of Teaching Science in the Secondary School	2
EDSEC 614	Laboratory Techniques in Teaching Science	3
MATH 100**	College Algebra	3
MATH 150**	Plane Trigonometry	3
MATH 312**	Finite Applications of Math	3
STAT 320	Elements of Statistics	3
		37

*Required for chemistry and physics options.

**Higher-level math courses may meet this requirement.

In addition to the core, candidates must complete at least one option below:

Biology option

BIOL 201	Organismic Biology	5
BIOL 303	Ecology of Environmental Problems	3
	or	
BIOL 529	Fundamentals of Ecology	3

Chemistry option

CHM 230	Chemistry II	4
CHM 371	Chemical Analysis	4
	or	
CHM 350	General Organic Chemistry	3
	and	
CHM 351	General Organic Chemistry Lab	2

Physics option

A minimum of 12 hours

PHYS 114	General Physics II	4
PHYS	One physics course that has Physics II as a prerequisite	
PHYS	Additional physics courses necessary to bring *option* total to 12 hours.	

Earth science option

GEOL 102	Earth Through Time	3
GEOL 105	Oceanography	3

At least one course selected from the following:

GEOL 502	Mineralogy	3
GEOL 520	Geomorphology	2

Other natural science courses may be considered for meeting the above requirements. It is important that they be approved in advance by a science education advisor.

Physics

BIOL 198	Principles of Biology	4
CHM 210	Chemistry I	4
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
PHYS 191	Descriptive Astronomy	3
PHYS 452	Contemporary Physics	4
GEOL 100	Earth in Action	3
GEOL 103	Geology Lab	1
MATH 100*	College Algebra	3
MATH 150*	Plane Trigonometry	3
MATH 210*	Technical Calculus	3
MATH 211*	Technical Calculus II	3
MATH 312*	Finite Applications of Math	3
STAT 320	Elements of Statistics	3
EDSEC 420	Block II Lab/Science	1
EDSEC 476	Methods of Teaching Science in the Secondary School	2

EDSEC 614	Laboratory Techniques in Teaching Science	3
		51

*Higher-level courses may meet this requirement.

Other natural science courses may be considered for meeting the above requirements. It is important that they be approved in advance by a science education advisor.

Psychology

PSYCH 110	General Psychology	3
PSYCH 350	Experimental Methods in Psychology	4
PSYCH 520	Life Span Personality Development	3
PSYCH 535	Social Psychology	3
PSYCH 460	Cognitive Psychology	3
	or	
PSYCH 475	Principles of Learning	3
	or	
PSYCH 480	Fundamentals of Perception and Sensation	3

Supporting courses required:

STAT 320	Elements of Statistics	3
	or	
STAT 330	Elementary Statistics for the Social Sciences	3
EDCEP 715	Principles of Assessment	3
EDSEC 420	Block II Lab/Social Sciences	1
EDSEC 476	Methods of Teaching Social Science in the Secondary School	2
		25

Speech

SPCH 321	Public Speaking II	3
THTRE 263	Oral Interpretation of Literature	3
SPCH 426	Coaching and Directing Speech Activities	3
SPCH 325	Argumentation and Debate	3
THTRE 270	Introduction to Theatre	3
THTRE 261	Fundamentals of Acting	3
THTRE 368	Fundamentals of Technical Production	3
THTRE 565	Principles of Directing	3
EDSEC 420	Block II Lab/Language Arts	1
EDSEC 476	Methods of Teaching Speech in the Secondary School	2
		27

Optional Secondary Certification Programs at the Middle Level

Middle-level family and consumer sciences

FSHS 105	Introduction to Personal and Family Finance	3
FSHS 200	Sexuality and Health	2
	or	
FSHS 302	You and Your Sexuality	3
FSHS 310	Early Childhood	3
FSHS 313	Preschool Child Laboratory	1
FSHS 350	Family Relationships and Sex Roles	3
FSHS 670	Working with Parents	3
FN 413	Science of Food	4
FN 400	Human Nutrition	3
IDH 410	Housing and Its Environment	3
CT 265	Textiles	2
CT 266	Textiles Lab	1
CT 440	Fundamentals of Apparel Evaluation	3
EDSEC 420	Block II Lab: Family and Consumer Sciences/Health Education	1
EDSEC 476	Content Area Methods: Family and Consumer Sciences/Health Education	2
EDEL/ EDSEC 476	Middle Level Education	3
EDSEC 621	Program Planning in Vocational Education: Family and Consumer Sciences	2
		39–40

Secondary Education Programs Outside the College of Education

The general education requirements as outlined in an earlier section must be completed by all students expecting to be certified to teach with the exception of students in agriculture. Students in these fields should see their academic advisor for specific requirements.

Students who pursue degrees in certifiable majors in the College of Arts and Sciences are responsible for satisfying all the requirements for teacher education as well as the degree requirements of arts and sciences.

Agricultural education (AED)

Students planning to be agricultural education teachers must complete the approved teacher certification program as part of the requirement for the bachelor of science in agricultural education in the College of Agriculture. Completion of this program satisfies state of Kansas program requirements for agricultural education certification for grades 7–12.

Professional education requirements

EDSEC 400	Leadership and Personal Development in Agricultural Education	1
EDSEC 503	Teaching Adult Classes in Agriculture	1
EDSEC 505	Field Experiences in Agricultural Education	1
EDSEC 620	Principles and Philosophy of Vocational Education	3
EDSEC 621	Program Planning in Vocational Education	3
FSHS 110	Introduction to Human Development	3

The following courses must be completed before admission to the professional semester:

EDSEC 300	Introduction to Agricultural Education	1
EDCEP 315	Educational Psychology	3
EDSP 323	Exceptional Students in the Secondary School	2
EDSEC 376	Core Teaching Skills and Lab	3
EDSEC 476	Content Area Methods in the Secondary School: Agricultural Education	2
EDSEC 477	Middle Level/Secondary Reading	2
EDSEC 420	Block II Lab Content and Reading Methods	1
EDETC 318	Instructional Media and Technology	2

Professional semester (see information earlier for specific prerequisites)

EDCIP 455	Teaching in a Multicultural Society	1
EDCEP 525	Interpersonal Relations in the Schools	1
EDSEC 586	Teaching Participation in the Secondary Schools and Professional Development Seminar	12
EDSEC 615	Lab and Safety Techniques in Teaching Agriculture	3
		45

Family and consumer sciences education

Students planning to be vocational family and consumer sciences education teachers must complete the approved teacher certification program as part of the requirements for the bachelor of science in human ecology degree program in the College of Human Ecology, family and consumer sciences education. Completion of this program satisfies state of Kansas program requirements for vocational family and consumer sciences education certification for grades 7–12.

Professional education requirements

DED 120	Teaching as a Career	1
FSHS 110	Introduction to Human Development	3

The following courses must be completed before entry into the professional semester:

EDCEP 315	Educational Psychology	3
EDSP 323	Exceptional Students in the Secondary School	2
EDSEC 376	Core Teaching Skills and Lab	3
EDSEC 420	Content and Reading Methods Lab	1
EDSEC 476	Content Area Methods in Secondary School: Family and Consumer Sciences Education	2
EDSEC 620	Principles and Philosophy of Vocational Education	3
EDETC 318	Instructional Media and Technology	2
EDSEC 477	Middle Level/Secondary Reading	2
EDSEC 710	Occupational Family and Consumer Sciences Education	2

Professional semester (see information earlier for specific prerequisites):

EDCEP 525	Interpersonal Relations in the School	1
EDCIP 455	Teaching in a Multicultural Society	1
EDSEC 621	Program Planning in Vocational Education	2
EDSEC 586	Teaching Participation in Secondary School	12
		40

Music education (MUSED)

Students planning to be music teachers must complete the approved teacher certification program as part of the requirements for the bachelor of music education in the College of Arts and Sciences. Completion of this program satisfies state of Kansas program requirements for certification for grades K–12.

The following courses is required for admission to teacher education:

DED 102	Teaching as a Career	1

The following course may be taken before the student is admitted to teacher education:

FSHS 110	Introduction to Human Development	3
EDCIP 310	Foundations of Education	3
EDETC 318	Instructional Media and Technology	2

The application for admission to a teacher education program must be filed and approved before a student may enroll in any of the following courses which must be completed before entry into the professional semester. Refer to an earlier section for specific requirements for admission to teacher education.

MUSIC 511	Music in the Schools K–6	4
MUSIC 512	Music in the Junior/Senior High School	4
EDCEP 315	Educational Psychology	3
EDSP 323	Exceptional Students in the Secondary School	2
EDCEP 525	Interpersonal Relations in the School	1
EDSEC 376	Core Teaching Skills and Lab	3
EDCIP 455	Teaching in a Multicultural Society	1
EDSEC 477	Middle Level/Secondary Reading	2
MUSIC 670	Advanced Studies in Music Education	2

Professional semester (see information earlier for specific prerequisites):

EDSEC 582	Teaching Participation in Music*	12
		43

*A full semester of student teaching is required in music education.

Early childhood education

Bachelor of science in human development and family studies
Minimum of 125 hours required
Early childhood certification, birth to kindergarten eligibility

Students planning to be certified as early childhood teachers must complete the approved program in early childhood education in the College of Human Ecology, Department of Human Development and Family Studies.

The general education requirements as outlined in an earlier section must be completed. Reference should be made to the section Admission to Teacher Education at the beginning of the College of Education section of this catalog.

Speech–language pathologist and school audiologist

The speech pathology–audiology program at K-State meets the requirements for the Certificate of Clinical Competence of the American Speech–Language–Hearing Association, and the Kansas Department of Education requirements for speech–language pathologist and school audiologist. The approved program requires both undergraduate- and graduate-level course work in the speech department of the College of Human Ecology resulting in the M.A. degree from the Graduate School. Students interested in the program are encouraged to obtain an advisor in the speech pathology/audiology program. Late entry into the program as a junior or senior is possible.

Other Program Choices

Leadership studies minor

K-State's interdisciplinary minor in leadership studies focuses on leadership development, personal development, and on-site experiences. The program will provide you with such fundamental leadership knowledge as historic and current leadership theories and the processes of political, societal, and cultural change.

The minor requires 18 semester hours. Some of these courses may already be part of your major, while others will be courses taken to enhance your program of study. Three core courses are required:

EDADL 212	Introduction to Leadership Concepts	2
EDADL 502	Practicum in Leadership Studies	3
EDADL 502	Leadership for the 21st Century	1

You must earn at least 12 additional hours to complete the minor, with at least one 3-hour course from each of the following areas (see your advisor for specific choices):

Foundations/skills
Ethics
Theories of leadership/organizational behavior
Societal and organizational applications of leadership

Coaching endorsement

The coaching endorsement is open to students who plan to coach at the high school level after graduation. The Kansas State High School Activities Association accepts the K-State College of Education coaching endorsement as a substitute for the American Coaching Effectiveness Program, which is currently offered through the KSHSAA educational program.

Any student interested in the College of Education endorsement program should take the following hours of course work:

EDSEC 250	Scientific Principles of Coaching	3
EDSEC 320	Care and Prevention of Athletic Injuries	3
EDSEC 587	Supervised Practicum for Athletic Coaches	2
One class selected from the following:		
EDSEC 302	Coaching and Officiating Basketball	2
EDSEC 305	Coaching and Officiating Football	2
EDSEC 306	Coaching and Officiating Volleyball	2
		10

Athletic training

The athletic training department is jointly supported by the College of Education and the Department of Intercollegiate Athletics. Course work includes prevention and treatment of athletic injuries, evaluation and emergency management of athletic injuries, therapeutic modalities in athletic injuries, rehabilitation and conditioning for athletic training, administration of athletic training programs, and supervised internship.

The following courses comprise the core courses in athletic training:

EDSEC 320	Care and Prevention of Athletic Injuries	3
EDSEC 551	Evaluation and Emergency Management of Athletic Injuries	3
EDSEC 555	Therapeutic Modalities in Athletic Training	3
EDSEC 556	Rehabilitation and Conditioning	3
EDSEC 557	Seminar in Issues in Administration of Athletic Training Programs	3
EDSEC 585	Internship in Athletic Training	1
		16

General Courses

General courses in education

DED 020. Honors Program. (0) I, II. All students accepted into the College of Education honors program must enroll each semester. Pr.: Sophomore or higher standing, 3.5 cumulative grade point average, acceptance into the honors program.

DED 051. Study Skills Laboratory. (1–3) I, II. Helps the student to learn effective study methods, analyze difficulties in reading and studying, and prepare for and improve performance in examinations.

DED 100. Pre-Professional Laboratory Experiences. (1) I, II. Supervised experiences in education designed to facilitate orientation and investigation of teaching through the teacher aide program. Maximum credit of 3 hours. No more than 1 credit per semester.

DED 102. Teaching as a Career. (1) I, II. Introduction to teaching as a career and to teacher preparation. Includes visits to and teacher aiding in public school classrooms with emphasis on the teacher's role. For lower-division students not yet admitted to teacher education.

DED 105. Introduction to Women's Studies. (3) I, II. A systematic introduction to women's studies as an academic discipline, drawing research from humanities, social science, education, human ecology, and management to analyze images of women, status of women, sex differences, gender roles and stereotypes, patterns of success, women and relationships, current controversial issues affecting women, and feminism as a social and historical movement. An academic perspective on issues of equality and justice for women, emphasizing scholarship on how women perceive their own lives.

DED 160. Introduction to American Ethnic Studies. (3) I. This course introduces students to the major concepts related to ethnicity and to some of the major American ethnic groups.

DED 315. Introduction to Gerontology. (3) II. A multidisciplinary introduction to the field of aging. Examines social, psychological, developmental, organizational, and economic aspects of aging. Theoretical, methodological, and applied issues of aging will be related to contemporary American society. Same as DAS 315; also offered through the Colleges of Agriculture, Architecture and Design, and Human Ecology.

DED 320. Honors Seminar. (1) I, II. Selected topics in education. May be taken more than once for credit.

DED 405. Senior Seminar in Women's Studies. (3) I. An intercollegiate, interdisciplinary course organized topically with students presenting papers which draw upon previous and concurrent academic experience and which approach a given topic with a consistent focus on the role of women. Provides supervised independent study and subsequent discussion, allowing students to integrate and order their perceptions about the unique roles, problems, and contributions of women. Pr.: DED 105 Introduction to Women's Studies and 15 hours of women's studies courses.

DED 415. Senior Seminar in Gerontology. (3) I. Integration of course work in gerontology with an in-depth project in a special interest area. Pr.: Completion of 15 hours of course work in gerontology second major. Same as DAS 315; also offered through the Colleges of Agriculture, Architecture, Planning, and Design, and Human Ecology.

DED 420. Honors Research. (1–3) I, II. Individual research projects under the supervision of a professor in the College of Education. For students in honors program only. Pr.: A minimum of 2 hours credit in DED 320 or 1 hour credit in DED 320 and 1 hour selected from GENAG 310, DAS 399, GNHE 399.

DED 499. Senior Seminar in American Ethnic Studies. (3) Guided research in American ethnic studies. Students prepare a research paper on a relevant subject of their choice. Each student is responsible for arranging to work with a member of the American ethnic studies faculty. Pr.: DED 160 Introduction to American Ethnic Studies.

DED 500. Topics in Women's Studies. (Var.) I, II, S. Exploration of an interdisciplinary topic in women's studies. Cross-listed with the Dean of Human Ecology and the Dean of Arts and Sciences.

DED 505. Independent Study in Women's Studies. (1–3) I, I. Independent, interdisciplinary, supervised studies in an area of women's studies which does not fall within the boundaries of a traditional department. May be repeated once for credit with change of topic. Pr.: Junior standing, consent of instructor(s), and approval of women's studies faculty.

DED 506. Contemporary Feminist Frameworks. (3) I. Surveys major contemporary U.S. theories of gender and their development, including impact of feminist movement on the development of theory, interactions of race and gender, women's culture, and men's roles. Compares approaches of social sciences and humanities. Pr.: Six semester hours women's studies.

DED 560. Topics in American Ethnic Studies. (1–4) I or II. Selected topics of special interest in American ethnic studies. Repeatable with change of topic. Pr.: DED 160 Introduction to American Ethnic Studies. Cross-listed with the Dean of Human Ecology and the Dean of Arts and Sciences.

Counseling and Educational Psychology

Michael Dannells, Chair

Professors Benton,* Bradley,* Dannells,* Dettmer,* Hanna,* M. Holen,* Hoyt,* Neely,* Newhouse,* and Newton;* Associate Professors K. Hughey,* M. Lynch,* and Steffen;* Assistant Professors J. Hughey* and C. Jones. Courtesy appointments: Karim, J. Lynch, Pallett, J. Robertson,* Sinnett,* Werring;* Emeritus: Cashin,* Danskin, and Kaiser.

The Department of Counseling and Educational Psychology contributes to the undergraduate teacher preparation program through its offerings in educational psychology and interpersonal relations in schools.

Counseling and educational psychology courses

EDCEP 111. The University Experience. (1–3) I, II. Introduction to the university experience through participation in weekly small group meetings and informational lectures. Study of such topics as academic skills, including communication and critical thinking, academic and career planning and goal setting, and social issues that challenge many college students. Pr.: New students or instructor consent.

EDCEP 202. Career and Life Planning. (2) I, II. Applies theory and research concerning assessment of interests and career choice-making to individuals' planning and decision-making. Focuses on increasing understanding of the complexities of the world of work and on skills of integrating such understanding with each person's experience, characteristics, motives, and values in the career exploration process. Reviews resume writing, interviewing skills, and job search techniques.

EDCEP 211. Leadership Training Seminar. (2) I, II. General principles of leadership as applied to small groups. Study of the role of the leader, group processes and interaction, defining group goals, and techniques of observation. Workshop and supervision in small group leadership. Pr.: Sophomore standing and consent of instructor.

EDCEP 311. Interaction and Guidance for the Paraprofessional. (3) I, II. Application of a systematic approach to interaction skills in a paraprofessional helping relationship. Includes background knowledge of listening skills and practice in emitting skills which influence interaction quality. Pr.: Junior standing.

EDCEP 315. Educational Psychology. (3) I, II, S. The application of psychological principles to the teaching-learning process with special emphasis on principles of learning, motivation, information processing, individual differences, and assessment. Pr.: Admission to teacher education, and HDFS 110. Secondary education students must take this course simultaneously with EDSP 323 and EDSEC 376.

EDCEP 502. Independent Study in Education. (1–3) I, II, S. Selected topics in professional education. Maximum of three hours applicable toward degree requirements. Pr.: Consent of department chair.

EDCEP 525. Interpersonal Relations in the Schools. (1) I, II. A didactic and experiential course designed to develop an understanding of human relations skills in the schools. Provides knowledge and skills necessary to work effectively with students, parents, and school personnel. Particular emphasis is on the basis for interpersonal relations in education, communication skills, the facilitative relationship, working with students in groups, and conducting meetings with parents and school personnel. Pr.: EDSEC 420, 476, and 477. Simultaneous enrollment required for EDCIP 455, EDCEP 525, and EDSEC 586.

EDCEP 711. Middle School Classroom Guidance. (3) On sufficient demand. Techniques of integrating guidance principles for pre- and early teens into a middle school concept; investigation of classroom dynamics for middle school teachers as members of the guidance team; involvement of teachers in model guidance programs. Pr.: EDCEP 315.

EDCEP 715. Principles of Assessment. (3) I, II, S. Principles of development, administration, evaluation, and constructive instructional use of paper-pencil, product, and performance assessments. Focus on norm- and criterion-referenced uses of teacher-made and published measures as an integral part of effective decision making in education. Pr.: EDCEP 315.

EDCEP 721. Mental Hygiene in the School and Community. (3) On sufficient demand. Dynamics creating different personalities and deviant behavior. The educative process as it affects personality integrity. Pr.: PSYCH 280 or FSHS 110.

EDCEP 775. Readings in Education. (1–3) I, II, S. Readings in research and application in specialized areas in education. May be taken more than once. Pr.: FSHS 110. Consent of department chair.

EDCEP 786. Topics in Education. (1–3) I, II, S. Examination of current topic in specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: FSHS 110. Consent of department chair.

EDCEP 795. Problems in Education. Credit arranged. I, II, S. Selected students are permitted to secure specialized training appropriate to the needs of the individual. The student's project may involve intensive library investigation in a special field or the collection and analysis of data pertinent to a given problem. All work is done independently under the direction of a faculty member. As many conferences are held as necessary to assure successful completion of a project. Pr.: Background of courses necessary for the problem undertaken, consent of instructor, and consent of department chair.

Educational Administration and Leadership

David Thompson, Chair

Professors Bailey,* Shoop,* Stewart,* Thompson,* and Wilson;* Associate Professors Bosco and Salsberry;* Assistant Professor Scott; Adjunct Professors Devin and Yunk; Emeritus: Keys.

Leadership studies minor

This program is a specially designed 18-hour minor that focuses on leadership development, personal development, and practicum/clinical experiences. It is a rigorous academic and experiential program designed to provide each student with such fundamental leadership knowledge as historic and current leadership theories and the processes of political, societal, and cultural change. Competencies such as knowledge of technology, effective research ability, effective speaking and writing, effective multicultural and cross-gender communication, critical thinking, ethical theory, group process facilitation, ability to collaborate, and networking will also be developed.

Educational administration and leadership courses

EDADL 212. Introduction to Leadership Concepts. (2) I, II, S. This course is organized to provide students with a broad overview of leadership theories, an introduction to ethical decision making, examination of personal leadership styles, and current societal issues for leaders. Pr.: None.

EDADL 213. Applied Leadership Skills. (3) I, II, S. This course provides opportunities for all interested students to be introduced to leadership skills application, with emphasis on practice in supervised clinical settings. Pr.: None.

EDADL 502. Independent Study/Practicum in Leadership Studies. (3) I, II, S. Students will identify and construct a semester-long (150 hour) leadership practicum, either in a leadership position associated with their academic major (in community of business setting, or through a student leadership position). Students will discuss the application of leadership theory and skills to their particular situation in a weekly seminar setting and through a final written project. Pr.: EDADL 212

EDADL 502. Independent Study/Leadership for the 21st Century. (1) I, II, S. In this capstone course, leadership for the next century will be discussed. Current leadership theories, as well as the use of technology, will be highlighted. The additional work force competencies such as managing change, creative problem solving, and sensitivity to diversity will also be presented. The overriding goal of this course is to assist students in integrating their academic and practicum course work in preparation for their continuing leadership roles. Pr.: EDADL 212

EDADM 502. Independent Study in Education. (1–3) I, II, S. Selected topics in professional education. Maximum of three hours applicable toward degree requirements. Pr.: Consent of department head.

EDADL 775. Readings in Education. (1–3) I, II, S. Readings in research and application in specialized areas in education. May be taken more than once. Pr.: FSHS 110.

EDADL 786. Topics in Education. (1–3) I, II, S. Examination of current topic in specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: FSHS 110.

EDADL 795. Problems in Education. Credit arranged. I, II, S. Selected students are permitted to secure specialized training appropriate to the needs of the individual. The student's project may involve intensive library investigation in a special field or the collection and analysis of data pertinent to a given problem. All work is done independently under the direction of a faculty member. As many conferences are held as necessary to assure successful completion of a project. Pr.: Background of courses necessary for the problem undertaken and consent of instructor.

Elementary Education

Ray Kurtz, Chair

Professors Burden,* Fallin,* Heller,* Kurtz,* and Staver;* Associate Professors Hancock,* Perl,* Shroyer,* and Smith;* Assistant Professors French,* Herrera, K. Holen, and

Kellstrom; Emeriti: Bloomquist, Brookhart, McAnarney, Schell, and Trennepohl.

The Department of Elementary Education offers a four-year program leading to certification in the elementary school with the option of adding a middle-level endorsement. The studies for the bachelor's degree include three areas: general education, professional education, and area of concentration.

Elementary education courses

EDEL 218. Elementary Teacher Education Colloquium. (1–2) On sufficient demand. Discussion, assigned readings, and lectures over selected trends, developments, and problems in the field of teaching.

EDEL 220. Orientation to Elementary/Middle School. (1) I, II. Orientation to the undergraduate elementary/middle school teacher preparation program including field experiences and general information relative to the education profession.

EDEL 300. Principles of Elementary Education. (3) I, II. An overall view of the elementary school: organization, management, purpose, curriculum trends, and pupil characteristics. Pr.: EDEL 220.

EDEL 379. Elementary/Middle-Level Physical Education Methods. (2) I, II. Materials, techniques, and programs in physical education suitable for the developmental levels in the elementary and middle school. Two contact hours required and two hours of lab per week. Pr.: Sophomore standing and EDEL 220.

EDEL 405. Middle-Level Education. (3) I. This course provides an overview of the characteristics of middle schools; the social, psychological, and physical characteristics of early adolescent development; middle-level curriculum; ways to organize for instruction; and the teacher's role in the guidance of students at the middle level. Cross-listed with EDSEC 405. Pr.: Admission to teacher education.

EDEL 420. Block A Clinical Experience. (1) I, II. Application of media/technology, mathematics, and science methods at the elementary/middle school level. Pr.: Admission to teacher education and conc. enrollment in EDEL 470, 473, and EDETC 318.

EDEL 430. Block B Practicum. (1) I, II. A field experience designed to give students opportunities in applying teaching methods in language arts, reading, and social studies. Pr.: Admission to teacher education and conc. enrollment in EDEL 471, 472, and 474.

EDEL 469. Physical Education in Elementary Schools. (3) I, II. Methods of teaching and organization of materials in a progression for an elementary physical education program. Pr.: Admission to teacher education, KIN 206, and at least two courses from the elementary physical education specialization.

EDEL 470. Elementary/Middle-Level Science Methods. (3) I, II. An introduction to the principles and methods of teaching science in the elementary and middle school, including the nature of science, student learning, curriculum, instructional methods and activities, equity issues, and student assessment. Pr.: Admission to teacher education.

EDEL 471. Elementary/Middle-Level Language Arts Methods. (3) I, II. An introduction to the content, methods, and materials of the elementary and middle school language arts curriculum, which encompasses oral language, listening, reading, and writing. Pr.: Admission to teacher education.

EDEL 472. Elementary/Middle-Level Social Studies Methods. (3) I, II. Methods and resources for teaching social studies in elementary and middle schools with the goal of helping elementary and middle school students develop the ability to make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an independent world. Pr.: Admission to teacher education.

EDEL 473. Elementary/Middle-Level Mathematics Methods. (3) I, II. The teaching of mathematics in the elementary and middle school, including the nature of mathematical processes, curriculum, methods of instruction, instructional materials, and the evaluation of outcomes. Pr.: Admission to teacher education.

EDEL 474. Elementary/Middle-Level Reading Methods. (3) I, II. An introduction to the objectives, content, methods, and resources of the total reading program in the elementary and middle school. Pr.: Admission to teacher education.

EDEL 502. Independent Study in Education. (1–3) I, II, S. Selected topics in professional education. Maximum of 3 hours applicable toward degree requirements. Pr.: Consent of department head.

EDEL 585. Teaching Participation in the Elementary School. (Var.) I, II. Observation and teaching participation under the direction of selected elementary teachers. Pr.: EDEL 300, 470, 471, 472, 473, 474, and admission to student teaching. Conc. successful completion of EDEL 600 required.

EDEL 600. Reading with Practicum. (3) I, II. Supervised observation and teaching of reading in approved school classrooms. Pr.: EDEL 474 or teaching experience. May not apply to reading specialist endorsement.

EDEL 717. Corrective Reading Instruction. (1–3) On sufficient demand. Supervised tutoring of children with reading difficulties. Not open to students with credit in EDEL 847. Pr.: Student teaching experience.

EDEL 720. Foreign Language Methods for Elementary Schools. (3) On sufficient demand. Methods of teaching and organization of materials for the foreign language program in the elementary school. Pr.: Educational Psychology II, 24 hours in the foreign language and advanced oral proficiency, and conc. enrollment in either Preprofessional Lab (DED 100, 1 cr.) or FLES Practicum (EDEL 502, 1–3 cr.).

EDEL 739. Environmental Education. (1–3) On sufficient demand. The selection, adaptation, and development of environmental education K–12 curriculum materials; procedures for an integrated curricular implementation; the selection of appropriate instructional strategies. Pr.: A course in environmental studies.

EDEL 775. Readings in Education. (1–3) I, II, S. Readings in research and application in specialized areas in education. May be taken more than once. Pr.: FSHS 110.

EDEL 779. Primary School Education. (3) On sufficient demand. A course for those interested in the kindergarten and primary school child. Emphasis will be placed on curriculum development, pertinent research, and innovative practices in early education. Pr.: FSHS 110.

EDEL 780. Kindergarten Education. (3) On sufficient demand. A specialized study of the kindergarten in the American school: methods and materials for working with the kindergarten child, including communication and explanation skills and readiness for reading. Pr.: FSHS 110, EDEL 300, and junior standing.

EDEL 786. Topics in Education. (1–3) I, II, S. Examination of current topic in area of specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: FSHS 110.

EDEL 795. Problems in Education. (Var.) I, II, S. Independent study of a specific problem in curriculum or instruction. Pr.: Junior standing or higher.

Foundations and Adult Education

Robert C. Newhouse, Interim Chair

Professors Byrne,* Litz,* Parish,* Oaklief,* Rankin,* Spikes,* and Wright;* Associate Professors Griffith,* Knupfer,* McGrath, * Polson, and Spears;* Assistant Professors Ross* and Slusarski; Other: Abbott; Emeritus: Boyer, Hausmann, Littrell, Meisner, and Price.

Adult and continuing education courses

EDACE 318. Adult and Continuing Education Colloquium. (Var.) On sufficient demand. Discussion, assigned readings, and lectures over selected trends, developments, and problems which are peculiar to the overall field of adult and continuing education. Students are encouraged to engage in self-study concerning their place in the profession of adult and continuing education. No more than 6 hours may apply to a degree.

Undergraduate and graduate credit in minor field

EDACE 502. Independent Study in Education. (1–3) I, II. Selected topics in professional education. Maximum of 3 hours applicable toward degree requirements. Pr.: Consent of department head.

Undergraduate and graduate credit

EDACE 704. Extension Organization and Programs. (3) I, S. Development and objectives of Cooperative Extension and other university adult education programs; with emphasis on programs and procedures. Cross-listed as EDSEC/EDACE 704. Pr.: Consent of instructor.

EDACE 706. Principles of Teaching Adults in Extension. (3) II, S. Methods and principles of adult teaching, with emphasis on Cooperative Extension Service; application to various adult education programs. Cross-listed as EDSEC/EDACE 706. Pr.: Senior standing, juniors by consent of instructor.

EDACE 713. Occupational Analysis. (2–3) I, II, S. An introduction to various techniques used in analyzing occupations and jobs. Emphasis on developing and organizing related instructional materials and content. Cross-listed with EDACE/EDSEC 713. Pr. or conc.: EDSEC 620.

EDACE 714. International Education. (3) On sufficient demand. Contemporary overview of the field of international education and an introduction to three of its parts: comparative education, intercultural education, and development education. Pr.: PSYCH 110.

EDACE 725. Adult Basic Education Techniques. (3) On sufficient demand. Emphasis on providing students with an understanding of the selection, utilization, and development of adult basic education reference, resources, and other materials. Pr.: FSHS 110.

EDACE 733 and 738. Practica in Adult Education. (1–6) On sufficient demand. Related occupational or professional experiences in approved industry, school, Cooperative Extension Service, or similar agency setting under faculty supervision. Pr.: Consent of instructor.

EDACE 733. Adult Education.

EDACE 738. Occupations in Business and Industry.

EDACE 739. Coordination of Cooperative Vocational Education. (2–3) I, II, S. Emphasis on the legal aspects and other minimum requirements essential to conducting cooperative vocational education programs at the secondary and postsecondary levels. Pr. or conc.: EDSEC 620.

EDACE 750. Women, Education, and Work. (2–3) II, S. Emphasizes the collective and individual educational needs of women in and out of the work force and the part that occupational/educational preparation contributes to their participation in the work force. Pr.: SOCIO 211 or equiv.

EDACE 753. Introduction to Occupational Education. (3) I, II, S. Overview of occupational education at all levels and its role in society. Designed for administrators, counselors, and vocational educators who perform a leadership function involving occupational education programs. Pr.: Teaching experience or consent of instructor.

EDACE 754. Adult Basic Education. (3) On sufficient demand. Evolving adult basic and high school equivalency education concepts will be examined. Program implementation, supervision, methods, and materials are emphasized. Pr.: Adult teaching experience or consent of instructor.

EDACE 775. Readings in Adult Education. (1–3) I, II, S. Readings in research and application in specialized areas in education. May be taken more than once. Pr.: FSHS 110. No more than 3 hours may apply to a graduate degree.

EDACE 780. Introduction to Adult Education. (3) I, II, S. A survey of adult education. Consideration given to articulation with other levels of education. Identification of changing needs within the field are reviewed. Pr.: Consent of instructor.

EDACE 782. Educational Gerontology. (3) On sufficient demand. For both the practitioner and those interested in educational gerontology as a field of inquiry, this course will combine practice and theory. It will examine education for and about aging, with particular reference to the role, needs, and ability of persons in the later years as learners. Stressing current trends and prospective new developments in the field, it will include a review of present programs and discussion of the teaching-learning process for older adults. Pr.: EDACE 780.

EDACE 786. Topics in Adult Education. (1–3) I, II, S. Examination of current topic in area of specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: FSHS 110.

EDACE 790. Characteristics of the Adult Learner. (3) II, S. For teachers and administrators in adult and occupational programs who need a familiarity with the major characteristics of adulthood which affect the adult as a learner. Includes an examination of early, middle, and late adulthood. Pr.: EDACE 780 or FSHS 110 or PSYCH 110.

EDACE 791. Career Education. (2–4) On sufficient demand. Emphasis on providing for prevocational and adult experiences including orientation and exploratory and applied experiences in school and nonschool situations. Cross-listed with EDACE/EDSEC 791. Pr.: Teaching experience or consent of instructor.

EDACE 792. Hospital and Industry Adult Education. (3) On sufficient demand. An introduction to principles, roles, organization, procedures, and problems of adult education in hospitals, industry, and related agencies.

EDACE 795. Problems in Adult and Continuing Education. (Var.) I, II, S. Independent study of specific problems in the areas of adult or occupational education.

Curriculum, instruction, and policy courses

EDCIP 310. Foundations of Education. (2–3) I, II, S. For prospective teachers. The philosophical, historical, sociological, and political influences on education as they relate to and explain contemporary issues in education in the United States. Pr.: Junior standing and admission to teacher education.

EDCIP 455. Teaching in a Multicultural Society. (1) I, II. Application of multicultural understandings to teaching in a multicultural society. Strategies for working effectively with students to achieve educational equity. Pr.: EDSEC 420, 476, and 477. Simultaneous enrollment required for EDCIP 455, EDCEP 525, and EDSEC 586.

EDCIP 502. Independent Study in Education. (1–3) I, II, S. Selected topics in professional education. Maximum of 3 hours applicable toward degree requirements. Pr.: Consent of department head.

EDCIP 611. Educational Sociology. (3) I, II, S. A study to gain an understanding of the ways in which the school can effectively use the social process in developing and educating the individual and to show the interrelationships of such institutions as the family, the church, the playgrounds, and the various youth-serving agencies with the school. Pr.: Senior standing.

EDCIP 704. Extra-Class Activities. (3) On sufficient demand. Organization, sponsorship, and objectives of clubs, publications, athletics, dramatics, musical organizations, assemblies, home room, and student council in junior and senior high schools. Pr.: Senior standing or consent of instructor.

EDCIP 706. Aerospace Education Workshop. (3) S. To provide elementary and secondary teachers with knowledge, skills, and attitudes about aerospace activities and the total impact of air and space vehicles upon society. Pr.: EDSEC 586 or teaching experience.

EDCIP 721. Economic Education Workshop. (3) S. Basic economic concepts and how to integrate them into elementary and secondary curriculums and an examination of recent economic education materials. Pr.: Senior standing or higher.

EDCIP 725. The Teacher and Child Abuse. (3) On sufficient demand. An exploration of child abuse and neglect with specific references to legal and moral responsibilities of teaching. Suggestions for detection, reporting, and responsive instruction for suspected cases of child abuse and neglect. Pr.: PSYCH 110 and junior standing.

EDCIP 730. Education of the Disadvantaged. (3) On sufficient demand. Consideration of the life-space of the disadvantaged learner and its relationship to curriculum, organization, and interpersonal relationships in schools. The development of realistic, relevant goals for the teacher of the disadvantaged. Pr.: EDCIP 310 or 611.

EDCIP 733. Curriculum Materials for Ethnic Diversity. (3) On sufficient demand. An examination and analysis of recent materials and practices of schools serving multiethnic student bodies, particularly minorities from disadvantaged backgrounds. Materials include any items used by the school in implementing the curriculum. Pr.: Senior standing or higher.

EDCIP 735. Curriculum Materials for Nonsexist Teaching. (3) II, S. Analysis of recent materials from perspective of concern with their potential for sex-role stereotyping. Examination of teaching resource materials for curriculum intended to facilitate nonsexist teaching. Pr.: Junior standing or higher.

EDCIP 737. Drug Abuse Education. (3) On sufficient demand. Emphasis on the development of effective drug abuse education programs with attention given to the role delineation for schools and teachers. Materials and procedures for developing values and attitudes in an education setting. Pr.: Senior standing.

EDCIP 775. Readings in Education. (1–3) I, II, S. Readings in research and application in specialized areas in education. May be taken more than once. Pr.: FSHS 110.

EDCIP 786. Topics in Education. (1–3) I, II, S. Examination of current topic in area of specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: FSHS 110.

EDCIP 795. Problems in Education. (Var.) I, II, S. Independent study of a specific problem in curriculum or instruction. Pr.: Junior standing or higher.

Secondary Education

Lawrence C. Scharmann, Chair

Professors Heerman,* Laurie,* and Scharmann;* Associate Professors Dalida, Harbstreit,* Hortin,* Parmley,* Royse,* Talab,* and Wissman;* Assistant Professors Byars,* Goodson, Griffin, and Yahnke; Instructors Chance–Reay, Epps, Jankovich, Kane, P. Staver, Stone, and Rudy; Courtesy appointments: McFarlin and B. Newhouse; Emeriti: Alexander, Carpenter, Goodenow, Hause, Prawl, Terrass, Wauthier, Welton, and Weimer.

The Department of Secondary Education offers a four-year degree program leading to certification as a secondary school teacher in one or more of the following fields: art, business, English, journalism, mathematics, modern languages, speech, natural sciences, and social science. In addition, the department provides teaching methods courses, field experiences, and secondary education student teaching experiences to serve students in music education. The department also provides similar courses for students in agricultural education and family and consumer sciences education.

Secondary education courses

EDSEC 050. Developmental Reading Laboratory. (3) I, II. Improves the college student's reading skills, rates of comprehension, vocabulary, and study skills. Pr.: Consent of instructor.

EDSEC 215. Information Processing. (3) I. Application of technical knowledge and decision-making skills in development of usable printed business documents. Emphasis is placed upon teaching theories and strategies as they apply to keyboarding.

EDSEC 218. Secondary Teacher Education Colloquium. (1–2) On sufficient demand. Discussion, assigned readings, and lectures over selected trends, developments, and problems in the field of teaching.

EDSEC 250. Scientific Principles of Coaching. (3) II. Physiological, psychological, and kinesiological principles of coaching. Topics include training and conditioning, motivation, psychological factors affecting sport skill in performance, and mechanical principles underlying sport performance. Not for kinesiology majors.

EDSEC 298. Coaching and Officiating Wrestling. (2) On sufficient demand. Study of rules, theory, and practices; methods of coaching. Pr.: KIN 250.

EDSEC 299. Coaching and Officiating Swimming. (2) II, in even years. Study of rules, theory, and practices; methods of coaching. Pr.: KIN 250.

EDSEC 300. Introduction to Agricultural Education. (1) I, II. Introduction to the program responsibilities, methodology, organization, current trends and issues, and future direction of programs in agricultural education. Students will be actively involved in the discussion and application of course material both in the classroom and in early field experiences conducted as a part of this course.

EDSEC 301. Coaching and Judging Gymnastics. (2) On demand. Study of rules, theory, and practices; methods of coaching. Pr.: KIN 250.

EDSEC 302. Coaching and Officiating Basketball. (2) II. Study of rules, theory, and practices; methods of coaching. Pr.: KIN 250.

EDSEC 303. Coaching and Umpiring Baseball. (2) I, in even years. Study of rules, theory, and practices; methods of coaching. Pr.: KIN 250.

EDSEC 304. Coaching and Officiating Track and Field. (2) II, in odd years. Study of rules, theory, and practices; methods of coaching. Pr.: KIN 250.

EDSEC 305. Coaching and Officiating Football. (2) I. Study of rules, theory, and practices; methods of coaching. Pr.: KIN 250.

EDSEC 306. Coaching and Officiating Volleyball. (2) I. Study of rules, theory, and practices; methods of coaching. Pr.: KIN 250.

EDSEC 309. Coaching and Officiating Tennis and Golf. (2) I, in odd years. Study of rules, theory, and practices; methods of coaching. Pr.: KIN 250.

EDSEC 315. Administrative Data Applications. (3) II. Development of competencies in the usage of integrated software packages as they apply to the automated business environment. Pr.: EDSEC 215..

EDSEC 320. Care and Prevention of Athletic Injuries. (3) I, II. Principles and practices of treatment, taping, and care of minor athletic injuries. Pr.: EDSEC 250 or BIOL 240 or conc. enrollment in BIOL 240.

EDSEC 359. Administration of Physical Education, Athletic, and Intramural Programs. (3) I. Study of problems associated with the conduct of activity programs. Specifically considered are selection and care of equipment and facilities, public relations, legal liability, and scheduling. Pr.: Junior standing.

EDSEC 376. Core Teaching Skills: Secondary/Middle. (3) I, II. General teaching practices and the opportunity to apply that information in a laboratory setting. Two hours of lec. and two of lab a week. Pr.: Admission to teacher education, DED 102, and FSHS 110. Must be taken simultaneously with EDCEP 315 and EDSP 323.

EDSEC 400. Leadership and Personal Development in Agricultural Education. (1) I, II. An examination of the role of the FFA advisor in the leadership and personal development of agricultural education students.

EDSEC 405. Middle-Level Education. (3) I. This course provides an overview of the characteristics of middle schools; the social, psychological, and physical characteristics of early adolescent development; middle-level curriculum; ways to organize for instruction; and the teacher's role in the guidance of students at the middle level. Cross-listed with EDEL 405. Pr.: Admission to teacher education.

EDSEC 410. Gymnastics and Aquatics in Physical Education. (3) I. Application of scientific principles to the teaching of gymnastics. Emphasis upon skill technique and spotting procedures for grades K–12. Pr.: KIN 320, 330, and 335 (or any two and conc. enrollment in the third).

EDSEC 415. Administrative Support Services and Technology. (1) II. Intended to develop subject matter competencies needed for careers in the business office: Computer usage (desktop publishing), uses of various office equipment and procedures, and awareness of computer networking, telecommunication and emerging technology.

EDSEC 416. Office Management. (3) I. An examination of the management and operation of the office from a practical viewpoint including a study of administrative systems, the ergonomic environment of the office, and the management of human resources in the office.

EDSEC 420. Block II Lab: Content and Reading Methods. (1) I, II. Field-based experience to help the preprofessional teacher practice the incorporation of specific content area with reading methods in the secondary and middle schools. Pr.: EDCEP 315, EDSP 323, and EDSEC 376. Simultaneous enrollment required for EDSEC 420, 476, and 477.

EDSEC 421. Rhythms in Physical Education. (3) II. Application of scientific principles to the teaching of rhythmical skills. Emphasis on methods of teaching creative, folk, square, and social dance in grades K–12. Pr.: KIN 320, 330, and 335 (or any two and conc. enrollment in the third).

EDSEC 427. Sports Skill Progressions. (3) II. Strategies for the effective teaching of team and individual and dual sports for secondary physical education. Emphasis will be on learning skill progressions, written preparation of lesson and unit plans, and writing effective objectives for an activity program. Additional course work will cover skill analysis and peer teaching opportunities for physical education majors.

EDSEC 461. Observation in Physical Education. (2) I, II. Observation of students engaged in school or community physical activity programs. Emphasis upon developmental assessment, interaction with students, and limited planning and organization of appropriate physical education activities. Two hours lab a week and one hour rec. Pr.: Junior standing and one or more physical education methods courses.

EDSEC 476. Content Area Methods in the Secondary School. (2–3) I, II. Principles of teaching applied to content area instruction in the secondary school; motivation; organization of subject matter; lesson planning; evaluation and reporting; challenging the levels of ability; organization and management of the classroom; methodology and materials of the secondary schools. Pr.: EDCEP 315, EDSP 323, and EDSEC 376. Simultaneous enrollment required for EDSEC 420, 476, and 477.

EDSEC 477. Middle Level/Secondary Reading. (2) I, II. Introduction and development of effective study/skilled reading strategies and abilities for learning from content area text material. Pr.: EDCEP 315, EDSP 323, and EDSEC 376. Simultaneous enrollment required for EDSEC 420, 476, and 477.

EDSEC 502. Independent Study in Education. (1–3) I, II, S. Selected topics in professional education. Maximum of 3 hours applicable toward degree requirements. Pr.: Consent of department head.

EDSEC 503. Teaching Adult Classes in Agriculture. (2–3) On sufficient demand. Organization and preparation of materials and methods used in teaching adult classes in vocational education in agriculture for young farmers and adults. Departments are visited for evaluation of programs and results. Pr.: EDSEC 620.

EDSEC 505. Field Experience in Agricultural Education. (2–3) On sufficient demand. A course for prospective teachers to help bridge the gap between classroom theory and student teaching. Emphasis will be on observation of and participation in school and community organizations and programs. Pr.: EDSEC 300 and FSHS 110 and consent of instructor.

EDSEC 551. Evaluation and Emergency Management of Athletic Injuries. (3) I. An in-depth study of evaluation techniques for athletic injuries by the athletic trainer. Pr.: EDSEC 320 and BIOL 240.

EDSEC 555. Therapeutic Modalities in Athletic Training. (3) II. The theory and application of the various energy systems used in the treatment of athletic injuries. Practical experiences will be emphasized. Pr.: EDSEC 320, PHYS 115.

EDSEC 556. Rehabilitation and Conditioning for Athletic Injuries. (3) II. A study of applied rehabilitation and conditioning techniques used by athletic trainers. Pr.: EDSEC 320 and KIN 330.

EDSEC 557. Seminar in Issues in Administration of Athletic Training Programs. (3) I. Application of various problems and issues affecting the athletic trainers in their roles as administrators in the areas of role delineation, budget designs, legal aspects of sport, facility design, and drug testing/drug education.

EDSEC 560. Art for Exceptional Children. (3) II. Use of art courses and activities to meet the needs of the mentally retarded, physically impaired, emotionally disturbed, or gifted child. Three hours lec. Pr.: PSYCH 110. Same as ART 560.

EDSEC 576. Safety Education. (2) II, S. Personal safety in home, school, community, and work place will be addressed. Special attention is given to local, state, and national resources related to safety practice and safety education.

EDSEC 582. Teaching Participation in Music. (8–12) I, II. Observation and teaching under the direction of selected music teachers in elementary, middle level, and secondary school music programs. Pr.: Admission to student teaching.

EDSEC 585. Internship in Athletic Training. (1–4) I, II. Supervised clinical application of practical skills in athletic training. Pr.: EDSEC 320. May be repeated for a total of 4 credit hours with additional prerequisite of KIN 330 and 335 required for last four semesters.

EDSEC 586. Teaching Participation in the Secondary Schools and Professional Development Seminar. (Var.) I, II. Guided observation, teaching participation, and study of teaching practices under direction of selected teachers in middle/junior and senior high schools. Student teachers will participate in seminar sessions to discuss issues and experiences encountered during this school-based experience. Pr.: EDSEC 420, 476, and 477. Simultaneous enrollment required for EDCIP 455, EDCEP 525, and EDSEC 586.

EDSEC 587. Supervised Practicum for Athletic Coaches. (2) I, II. Observation and coaching participation under the direction of selected coaches in public school, club, city recreation, or other nonpublic school sport settings. Pr.: EDSEC 250, 320, and one coaching and officiating course.

EDSEC 611. Coordination Techniques. (1) II. Acquaints students with techniques in selecting, implementing, and coordinating occupational programs between the school and the business community. Pr.: EDSEC 620.

EDSEC 612. Job Analysis. (1) II. Acquaints students with techniques of analyzing jobs and tasks related to occupations. Pr.: EDSEC 620.

EDSEC 614. Laboratory Techniques in Teaching Science. (3) I, II. Rationale for laboratory in secondary school science. The design and implementation of laboratory activities and demonstrations in a high school science program. Pr.: EDSEC 476 (Science).

EDSEC 615. Laboratory and Safety Techniques in Teaching Agriculture. (3) I. The course is designed to provide students with the knowledge and skills necessary to design, organize, and conduct programs in agricultural laboratory instruction in secondary agricultural education programs. Students will gain experiences in the development of laboratory lesson plans, safety and technical demonstrations, student management in a laboratory setting, laboratory design, and laboratory curriculum development. Pr.: Conc. enrollment in EDSEC 420 Block II Lab/Ag.

EDSEC 620. Principles and Philosophy of Vocational Education. (3) I, II, S. Provision for vocational education in Kansas and other states and countries; principles and philosophy underlying such education, relation of vocational education to school objectives and community, state, and national needs. Pr.: EDCEP 315.

EDSEC 621. Program Planning in Vocational Education. (2-3) I, II, S. The program development and planning process; development of guides for teaching and evaluating reimbursable secondary programs. Pr.: EDSEC 620.

EDSEC 701. Administration and Supervision of Vocational Education. (2–3) II, S. On sufficient demand. Emphasis on the duties and responsibilities of administrative and supervisory personnel responsible for the promotion, development, and coordination of comprehensive vocational-technical education programs at the local level. Pr.: Teaching experience or consent of instructor.

EDSEC 704. Extension Organization and Programs. (3) I, S. Development and objectives of Cooperative Extension and other university adult education programs; with emphasis on programs and procedures. Cross-listed as EDSEC/EDACE 704. Pr.: Senior standing or consent of instructor.

EDSEC 705. Organization Problems in Teaching Agricultural Mechanics. (Var.) On sufficient demand. Analysis of the agricultural mechanics course of study; needs and interests of students; learning difficulties; skills and technical knowledge required; correlation with agriculture; application of laws of learning to the teaching process; determination of objectives. Pr.: EDSEC 586.

EDSEC 706. Principles of Teaching Adults in Extension. (3) II, S. Methods and principles of adult teaching, with emphasis on Cooperative Extension Service; application to various adult education programs. Cross-listed as EDSEC/EDACE 706. Pr.: Senior standing, juniors by consent of instructor.

EDSEC 710. Occupational Family and Consumer Sciences Education. (2) I. Principles and procedures in planning and organizing home economics-related occupational programs. The course includes an approved occupational experience in business/industry and consideration of methods and teaching materials peculiar to these programs. Pr.: FSHS 110 or conc. enrollment.

EDSEC 713. Occupational Analysis. (2–3) I, II, S. An introduction to various techniques used in analyzing occupations and jobs. Emphasis on developing and organizing related instructional materials and content. Cross-listed with EDACE/EDSEC 713. Pr. or conc.: EDSEC 620.

EDSEC 715. Reading in the Content Areas. (3) On sufficient demand. Information concerning the reading process and techniques for helping students develop reading and study skills needed in the content areas. Course is designed for classroom middle level and secondary teachers. Pr.: Senior standing.

EDSEC 732–737. Practica in Education. (1–6) On sufficient demand. Related occupational or professional experiences in approved industry, school, Cooperative Extension Service, or similar agency setting under faculty supervision. Pr.: Consent of instructor.

EDSEC 732. Career Education.

EDSEC 734. Agriculture-Related Occupations.

EDSEC 735. Business and Office Occupations.

EDSEC 736. Extension Education.

EDSEC 737. Family and Consumer Science-Related Occupations.

EDSEC 740. Advising Youth Organizations. (2–3) On sufficient demand. An examination of the role of an advisor in the effective operation of a youth organization. Pr.: PSYCH 110.

EDSEC 741. German Culture in Second-Language Learning. (3) Emphasis on the study of German culture and application to German curriculum, including the development of materials. Pr.: Twenty-four credits in 200 and above in German or equiv. (Same as GRMN 741).

EDSEC 743. French-Speaking Cultures in Second Language Learning. (3) On sufficient demand. Emphasis on the study of French culture and applications to the French curriculum, including the development of materials. Pr.: 24 credits at 200 or above in French, or equiv. Cross-listed with modern languages FREN 743.

EDSEC 770. Methods for Second Language Acquisition/Learning. (3) On sufficient demand. Study of the development of second language instruction, both historical and current. Syntax, morphology, discourse analysis, and global proficiency evaluation are foci for analysis of methods and for the development of a personal method of teaching. Pr.: EDSEC 476 and 24 credits in one second language at 200 level and above or equivalent.

EDSEC 775. Readings in Education. (1–3) I, II, S. Readings in research and application in specialized areas in education. May be taken more than once. Pr.: FSHS 110.

EDSEC 776. Teaching in the Middle/Junior High School. (3) On sufficient demand. Several instructional approaches consistent with the characteristics of the emerging adolescent student (grades 5-9) will be examined in relation to current research. Direct development of alternative curricular programs, appropriate use of interdisciplinary activities and nontraditional materials will be emphasized. Pr.: EDCEP 315, middle-level field experience, elementary or secondary content methods course.

EDSEC 777. Hispanic Cultures in Second-Language Learning. (3) Emphasis on the study of Spanish culture and applications to the Spanish curriculum, including the development of materials. Pr.: Twenty-four credits in Spanish at 200 or above or equivalent. Same as SPAN 777.

EDSEC 786. Topics in Education. (1–3) I, II, S. Examination of current topic in area of specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: FSHS 110.

EDSEC 791. Career Education. (2–4) On sufficient demand. Emphasis on providing for prevocational and adult experiences including orientation and exploratory and applied experiences in school and nonschool situations. Cross-listed with EDACE/EDSEC 791. Pr.: Teaching experience or consent of instructor.

EDSEC 795. Problems in Education. (Var.) I, II, S. Independent study of a specific problem in curriculum or instruction. Pr.: Junior standing or higher.

Educational technology and computer education courses

EDETC 318. Instructional Media and Technology. (2) I, II. Experiences in the selection, production, use, and evaluation of instructional materials. Applications of technology in education, including microcomputer use, but not programming. Operation and simple maintenance of equipment. Pr.: Admission to teacher education.

EDETC 502. Independent Study in Education. (1–3) I, II, S. Selected topics in professional education. Maximum of 3 hours applicable toward degree requirements. Pr.: Consent of department head.

EDETC 705. Organization and Processing of Instructional Materials. (2) I. Supervisory experiences in cataloging, organization, arrangement, and processing of print and nonprint materials for media centers and libraries. Issues in and approaches to coding and bibliographic concepts are explored. Pr.: EDETC 318 and ENGL 355 or 545.

EDETC 718. Microcomputers in Instruction. (2) I, II, S. Trends in computer applications in instruction, major components and functions of microcomputer instructional systems, and use of authoring systems for computer-assisted instruction. Does not prepare the student to teach computer programming. Pr.: EDEL 585 or EDSEC 586.

EDETC 719. Microcomputers in Instruction Lab. (1) I, II, S. Applications of BASIC and PASCAL to design of computer-assisted instruction and other classroom application of microcomputers. One two-hour lab a week. Conc. with EDETC 718. Pr.: CIS 200 and 203.

EDETC 723. Computer Applications in Subject Areas. (1–3) On sufficient demand. Theory and practice of using computer software to enhance teaching and learning in specific subject areas. Subjects covered will vary. May be repeated for credit in different subject areas. Pr.: EDETC 318 and EDCEP 315.

EDETC 756. Visual Communication. (3) I, alternate S. Implications of visual communication and learning for the design of instructional programs. Pr.: Graduate standing or EDETC 318 and EDCEP 315.

EDETC 762. Instructional Television. (3) II, alternate S. The principles of instructional television: its development, programming, techniques, and application. Pr.: Junior standing.

EDETC 763. Instructional Design. (3) I, alternate S. Implications of the major theories and models of instructional design to the development of instructional programs. Pr.: EDETC 318 and EDCEP 315.

EDETC 764. Telecommunications in Education. (Var. 2–3) Alternate S. Examination of the relationship of current telecommunications media and hardware to the design of instruction. Pr.: EDETC 318 and permission of instructor or graduate standing.

EDETC 765. Planning and Developing Instructional Materials. (3) II, S. The principles and processes involved in planning and producing instructional materials, ranging from the preparation of simple graphic and photographic materials to computer-assisted programmed instruction. Pr.: EDETC 861 or consent of instructor.

EDETC 775. Readings in Education. (1–3) I, II, S. Readings in research and application in specialized areas in education. May be taken more than once. Pr.: FSHS 110.

EDETC 786. Topics in Education. (1–3) I, II, S. Examination of current topic in area of specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: FSHS 110.

EDETC 795. Problems in Education. (Var.) I, II, S. Independent study of a specific problem in curriculum or instruction. Pr.: Junior standing or higher.

Special Education

Mary Kay Zabel, Chair

Professors Dettmer,* Dyck,* Thurston,* White,* M. K. Zabel,* and R. Zabel;* Assistant Professors Kaff, Knackendoffel, and Navarette.

Studies in special education accommodate students who wish to specialize in teaching children and youth with certain exceptionalities. Students must complete an undergraduate teacher education program leading to certification for either elementary or secondary school teaching. Program focus is to work with students with mild/moderate disabilities or high abilities at the preschool, elementary, and secondary levels.

Special education courses

EDSP 323. Exceptional Students in the Secondary School. (2) I, II, S. Designed for regular classroom teachers in meeting the needs of exceptional adolescents. Support strategies for teachers and exceptional students in the mainstream of education. Pr.: Admission to teacher education, and FSHS 110.

EDSP 324. Exceptional Child in the Regular Classroom. (3) I, II. Designed for general education teachers in meeting the needs of exceptional children. Support strategies for teachers and exceptional children in the mainstream of education will be explored. Pr.: Admission to teacher education, and EDCEP 315 (may be taken simultaneously).

◆EDSP 400. The Culture of Childhood. (3) I. This course, designed for the General Education Core, is a study of childhood and children from a variety of perspectives. Exploring the ways children are viewed from historical, cultural, scientific, artistic, religious, philosophical, educational, and sociological frameworks will be a major focus. Students from various disciplines within the university will examine how their particular specialty influences and is influenced by the concept of childhood. Pr.: Sophomore standing.

◆EDSP 500. Introduction to Human Exceptionality . (3) II. Survey of history and legal aspects of service, etiologies, characteristics, and special needs of exceptional individuals. Pr.: FSHS 110 or PSYCH 100.

EDSP 502. Independent Study in Education. (1–3) I, II, S. Selected topics in professional education. Maximum of three hours applicable toward degree requirements. Pr.: Consent of department chair.

EDSP 710. Education of Exceptional Individuals. (3) I, II, S. A general study of special education, with emphasis on legislation, Individual Education Plans, cross-cultural assessment and intervention, and strategies for exceptional students at the preschool, elementary, and secondary levels. Pr.: EDCEP 315 and EDSP 323 or EDSP 324.

EDSP 721. Characteristics of Learning Disabilities. (3) I, II. An explanation of important concepts and practices in the area of learning disabilities. Emphasis will be placed upon diagnosis of underlying causes and their characteristics. Pr.: EDSP 323 or 324, and EDCEP 315.

EDSP 724. Characteristics of Mental Retardation. (3) I. Etiological, psychological, sociological, and educational aspects of mental retardation. Pr.: EDSP 323 or 324, and EDCEP 315.

EDSP 728. Characteristics of Emotional and Behavioral Disorders. (3) I, II. Study of conceptual models for understanding emotional and behavioral disorders of childhood and adolescents, and their implications for educators. Pr.: EDCEP 315 and EDSP 323 or EDSP 324.

EDSP 750. Introduction to Education of the Gifted. (3) On sufficient demand. An overview of historical perspectives related to gifted child education, various facets of intellectual and creative functioning, national and state guidelines for planning and implementing gifted programs, modifying curriculum and classroom strategies to nurture gifted potential, current issues in gifted education. Pr.: EDSP 323 or 324.

EDSP 755. Guidance of the Exceptional Individual. (3) On sufficient demand. Strategies for teachers in working with the academic, vocational, personal, and social adjustment of the exceptional individual. The course will focus on the individual in preschool, elementary, secondary, postsecondary, and adult settings. Pr.: EDSP 722 or 763 and EDSP 323 or EDSP 324..

EDSP 775. Readings in Special Education. (1–3) I, II, S. Readings in research and application in specialized areas in education. May be taken more than once. Pr.: EDCEP 215.

EDSP 777. Behavior Management for Exceptional Individuals. (3) II. Theoretical and practical applications of behavior analysis with emphasis on preventing and remediating behavior problems of students with disabilities. Pr.: EDCEP 315 and EDSP 323 or EDSP 324.

EDSP 778. Technology for Special Education. (2) II. Designed to help special educators develop an awareness of technology that can assist in the lives and learning of students receiving special education. Administrative applications of technology related to special education will also be covered. Pr.: EDCEP 315 and EDSP 323 or EDSP 324.

EDSP 786. Topics in Education. (1–3) I, II, S. Examination of current topic in specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: EDCEP 315 and EDSP 323 or EDSP 324.

EDSP 787. Field Experiences in Special Education. (1–3) On sufficient demand. Observation and supervised activities in schools, camps, clinics, or institutions related to student's area of special interest or preparation. Pr.: EDSP 323 or EDSP 324 and EDSP 710.

EDSP 795. Problems in Special Education. Credit arranged. I, II, S. Selected students are permitted to secure specialized training appropriate to the needs of the individual. The student's project may involve intensive library investigation in a special field or the collection and analysis of data pertinent to a given problem. All work is done independently under the direction of a faculty member. As many conferences are held as necessary to assure successful completion of a project. Pr.: Background of courses necessary for the problem undertaken and consent of instructor.

Engineering

Terry S. King, Dean
Richard Gallagher, Interim Associate Dean
Tom C. Roberts, Assistant Dean
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A course of study leading to a degree in the College of Engineering provides a well-rounded university education and equips students with a broad theoretical and practical background to meet the new and demanding problems of our technological society.

The College of Engineering offers the bachelor of science degree in the following fields: architectural engineering, biological and agricultural engineering, chemical engineering, civil engineering, computer engineering, computer science, construction science and management, electrical engineering, industrial and manufacturing systems engineering, information systems, mechanical engineering, nuclear engineering, and nuclear reactor technology.

The College of Engineering at K-State is the most comprehensive college of engineering in Kansas. All degree programs are nationally accredited.

General Requirements

High school graduates

Admission to the College of Engineering is granted to any individual who has graduated from an accredited Kansas high school. Out-of-state students are expected to have a strong academic rank in class and good ACT scores.

Transfer students

Applicants with previous college credit, earned after graduation from high school, must apply as transfer students. All applicants to the college with 12 combined or more transfer hours, must have a 2.75 cumulative GPA or higher. Transfer students with a GPA between 2.5 and 2.75 will be admitted on a conditional basis in general engineering. Given extenuating circumstances, exceptions to this policy may be granted with the recommendation of the pre-engineering advisor at the transfer institution. The advisor should send a letter of recommendation with the student application and fee to the Office of Admissions with a copy of the letter to the College of Engineering.

International students

Applications for admission of international students are judged by several factors, including, but not limited to: secondary school record, test scores, academic record at the college and university level, trend in grades, and grades in mathematics, physical sciences, and related areas.

Because of a limitation on the number of international students that can be accommodated, the College of Engineering reserves the right to apply more rigorous admissions criteria to applicants who are not U.S. citizens.

Scholarships

All students applying for College of Engineering scholarships must complete the K-State scholarship application. Obtain an application from your high school counselor, community college financial aid office, or the Office of Student Financial Assistance. In addition to scholarships awarded by the Office of Student Financial Assistance, the College of Engineering awards numerous scholarships directly to incoming and continuing students. Initial inquiries by prospective students for engineering scholarships should be directed to the Office of Student Services, College of Engineering.

Selection of a major

Students often select a curriculum or major when entering the college. They are provided academic advisors by their major departments. Entering students who are undecided as to a major in engineering may enroll in general engineering for one year. These students are assigned an advisor from the dean's office. Students are encouraged to choose a major by the beginning of their sophomore year.

Extracurricular activities

Leadership, communication, and interpersonal skills are essential for today's engineering graduate. The College of Engineering offers many opportunities to become involved on campus through departmental student chapters, open house, student government, competition teams, and much more. Each contributes to greater personal and professional development.

Engineering equipment fee

The engineering equipment fee is in addition to the normal university fees. For further information see the Fees section of this catalog. Questions should be referred to the College of Engineering Student Services Office.

Grade requirements

In addition to the university standards and policies for grades, the College of Engineering has the following standards:

Prerequisite courses

Before attempting a course taught in the College of Engineering, a grade of C or better must be earned in the prerequisite courses.

500-level course or higher

The following policy is applicable for all engineering courses, including construction science and computing and information sciences.

a. To take 500-level courses or higher in the College of Engineering, a junior (60–89 hours) must have at least a 2.3 overall GPA in resident course work. 500-level courses in the fourth semester of the published curriculum are excluded from this policy.

b. New transfer students may take 500-level courses or higher in the College of Engineering if they meet the college admissions requirements and satisfy the course prerequisites.

c. Students may pre-enroll in a 500-level course or higher in the College of Engineering without meeting the criteria in (a) or (b); however, they must satisfy the criteria to remain in the course after the start of classes.

d. If an engineering junior, who has completed one or more 500-level courses or higher in the College of Engineering, fails to maintain at least a 2.3 overall GPA, the following action(s) may be taken by the student with the approval of his/her advisor:

1. Repeat required courses to raise grades. Students may not take any new engineering courses at the 500 level or above.
2. Take any humanities or social science courses which satisfy the elective requirements of the curriculum.
3. Take additional courses in mathematics, physics, chemistry, and/or lower-level courses in engineering to raise the overall GPA. Students may complete additional courses beyond degree requirements to enhance their career goals.

During this period, the student may take no new 500-level courses or higher in the college.

Summer school

Many of the courses appearing in the engineering curricula, not only those which are offered in the College of Engineering but also those in the College of Arts and Sciences, may be taken during the summer term.

High school seniors who have had insufficient mathematics to enroll in MATH 220 Analytical Geometry and Calculus I are urged to investigate the possibility of summer school to remove this mathematics deficiency.

MATH 100 College Algebra and MATH 150 Plane Trigonometry are offered during the summer sessions and provide an excellent transition from high school mathematics into the engineering curriculum.

University General Education

To satisfy university degree requirements, an engineering student must take a minimum of 18 credit hours of approved university general education courses with at least 6 credit hours at the 300 level or above. This requirement may be met with required courses in the curriculum and/or with electives, e.g., humanities and social science electives, which have also been designated as university general education courses. In most instances, courses will be used as "overlays," e.g., to satisfy concurrently a requirement based on accreditation criteria and a university general education requirement.

Requirements

The minimum university general education requirements of the college include:

Humanities and social science: 9 credit hours (at least one course in each group)
Natural science: 3 credit hours
Unrestricted disciplines: 6 credit hours

At least 6 credit hours at the 300 level or above.
No more than 7 credit hours from a single department.
No more than 3 credit hours from the College of Engineering. This course may not be in the student's major unless approved by the Faculty Senate.

For a list of approved university general education courses, refer to the latest *Course Schedule* or to college advising information. The classification of various humanities and social science electives is determined by the respective accrediting organization.

Students who have pursued and acquired acceptable academic credit prior to fall 1997 are not obligated. Students who pursue and complete their first acceptable credit in fall 1997 or later must meet all aspects of the university general education program.

In course descriptions, general education courses are marked with a ◆. The Degrees section at the front of this catalog lists other university general education courses. A list of currently offered university general education courses is available on the web at these addresses:
- http://www.ksu.edu/course/
- http://www.ksu.edu/educadv/

Degree Programs

Engineering is a profession in which knowledge of mathematics and natural science is applied to develop ways to utilize the materials and forces of nature for the benefit of mankind. The curricula for the College of Engineering is designed to meet the Accreditation Board of Engineering and Technology (ABET) degree program criteria. The overall curriculum provides an integrated educational experience and includes course work in the following areas:

Basic pre-engineering subjects	Use in various curricula; credit hours at K-State													
	ARE	BAE	CHE	CE	CMPEN	CNSM	CS	DEN	EE	IE	IS	ME	MFSE	NE
Accounting		*				3	*		*	3	*			
Biology		4	*		*		*				*			*
Chemistry (inorganic)	8	8	8	8	4		*	8	8	8	*	8	8	8
Chemistry (organic)		3	8		*				*					*
Chemical analysis (qualitative)			4	*										*
Computer programming**	2C	2C	1F	2C	5J,C	2C	4J	*	3C	2C	4J	3C	2C	3C
Economics (macroeconomics)	3	3	3	3	3	3	*	3	3	3	*	3	3	3
Expository Writing I***	3	3	3	3	3	3	6	3	3	3	6	3	3	3
Geology	3		*	3	*	3	*		*		*			
Graphics	4	2	*	2	*	4		2	*	2		2	2	*
Humanities/social sciences+++	13	13	15	13	15	12	23	12	15	14	23	13	14	13
Mathematics (Analytic Geometry and Calculus, and Differential Equations)	16	16	16	16	16	4	8	16	16	16	6+	16	16	16
Physics (calculus-based)	10	10	10	10	10	8++	*	10	10	10	*	10	10	10
Speech (public speaking)	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Statics	3	@	*	3	@	3++		@	@	@	@	3	@	@
Statistics (calculus-based)	*	*	*	1	3	*++	3	*	3	6	3++	2	6	

*Elective, may depend on departmental options.

**Computer programming: F = Fortran, J = Java, C = "C" Language.

***Expository Writing II is optional for all programs (except CS and IS) if a grade of A or B is achieved in Expository Writing I.

+General Calculus and Linear Algebra (MATH 205) and Finite Applications of Math (MATH 312).

++Construction science, computer science, and information systems students may take algebra-based courses.

+++Two courses (6 hours) must be junior/senior level (300+, not available at two-year schools). CS and IS are exceptions requiring a prerequisite sequence.

@Confer with Engineering Student Services Office on statics requirements. These programs use a 4-hour combined Statics and Dynamics course. (Dynamics is not available at two-year schools).

- Physical sciences and mathematics
- Communications
- Humanities and social sciences
- Engineering sciences
- Discipline-specific courses and technical electives.

All K-State ABET programs exceed the minima, so when coupled with the English and speech requirements of the university, graduates of these programs have taken at least 60 credit hours outside the College of Engineering.

A college requirement for engineering sciences ensures that students will take courses in two to four engineering departments outside their major department. Consequently, when one considers the breadth of our ABET accredited programs, they should not consider solely the proposed general education program of the college, but the other curricular requirements as well. From this perspective, significant program breadth will continue to be ensured.

The construction science and management major is accredited by the American Council for Construction Education. This program requires 18 credit hours of humanities and social science courses: ECON 110, DEN 210, plus 12 credit hours of electives. The computer science major is accredited by the Computing Sciences Accreditation Board.

Many of the fundamental courses required for a degree in engineering may be obtained through pre-engineering programs at other four-year institutions or at community colleges. In general, two years of course work will be transferable. However, there are differences among the curricula; students electing this route should work closely with the advisors and K-State to ensure a proper selection of courses. Questions should be referred to the College of Engineering Student Services Office.

The chart on the previous page indicates the number of transferable credit hours for various courses, and is a guide to courses that current K-State students will be taking.

The grade or Cr is not acceptable for transfer into College of Engineering programs.

Engineering subjects that normally are offered during the summer include:

CE 530	Statics and Dynamics	4
CIS 200	Fundamentals of Computer Programming	4
CIS 209	C Programming for Engineers	3
CIS 300	Algorithms and Data Structures	3
CIS 500	Analysis of Algorithms and Data Structure	3
EECE 519	Electric Circuits and Controls	4
ME 512	Dynamics	3
ME 513	Thermodynamics I	3
ME 571	Fluid Mechanics	3

Humanities and social science electives

To add breadth to education and to help prepare for a more effective role in society, each engineering student is required to take several courses in social sciences and humanities. The following list of electives has been approved by the faculty.

Anthropology: Any course
Architecture: Any course in history or appreciation of architecture
Art: Any course
Economics: Any course above 110, which is required
Engineering: DEN 299 Honors Seminar in Engineering (2); DEN 399 Honors colloquium in Engineering (1); DEN 450 Impact of Engineering and Technology on Society (3) DEN 210 History of Building and Construction (3)
English: Any course in literature
Geography: Any course except 220, 221, 555, 700, 702, 705, and 708
History: Any course
Mass communications: 235, 530, 560, 710, 715, and 720
Modern languages: Any course (except English or the student's native language)
Music: Any course in theory, history, or appreciation of music (Music 160 must be the 2-credit-hour-class)
Philosophy: Any course except 110, 220, and 510
Political science: Any course
Psychology: Any course
Sociology: Any course except 520, 724, 725, and social work courses

Courses must be selected from at least two areas listed above and at least two advanced level courses must be taken. These are normally 300 level or above, except for modern languages where the third and following courses in a sequence are considered advanced level. Not more than 3 credit hours may be taken in applied art. All courses must be taken for a letter grade.

Credit by examination

K-State offers students a variety of quiz-out programs through which a student may earn academic credit in specific courses. Engineering students may earn quiz-out credits in chemistry, computer science, English, mathematics, modern languages, and speech.

Physical education

The requirement for KIN 101 Principles of Physical Fitness is being removed from all curricula, so students should not complete a course for this requirement.

Advanced Placement

Many students earn credits by completing Advanced Placement tests. Students who have completed these tests should have the Educational Testing Service (ETS) forward an official report of their scores to the Office of Admissions at Kansas State University in order to receive credit.

For more information contact:
Office of Admissions
Kansas State University
119 Anderson Hall
Manhattan, KS 66506–0102
785-532-6250 or 1-800-432-8270 (in Kansas)
E-mail: kstate@ksu.edu

ROTC credits

Any student may apply a maximum of four hours of basic ROTC credit toward the degree without being required to take more credits than non-ROTC students.

Engineering sciences

Engineering sciences apply science and mathematics to the basic engineering areas. Students pursuing a B.S. degree in engineering must satisfy the following requirements:

A minimum of 32 semester hours of engineering science courses.

At least 9 semester hours of engineering science courses outside the student's major department.

At least four of the six subject areas in the following list must be represented in the 32 semester hours.

Engineering materials		
CHE 350	Engineering Materials	2
CHE 352	Engineering Materials	3
NE 515	Nuclear Engineering Materials	2
EECE 795	Solid State Engineering	3
Analytical mechanics		
	Either	
CE 333	Statics	3
	and	
ME 512	Dynamics	3
	or	
CE 530	Statics and Dynamics	4
Circuits, fields, and electronics		
EECE 510	Circuit Theory I	3
EECE 519	Electrical Circuits and Controls	4
EECE 557	Electromagnetic Theory	4
EECE 632	Engineering Applications of Microcomputer Systems	3
Thermodynamics		
CHE 520	Chemical Engineering Thermodynamics I	2
ME 513	Thermodynamics I	3
Flow and rate processes		
ME 571	Fluid Mechanics	3
CHE 530	Transport Phenomena I	3
Computing and information sciences		

There are other courses in these subject areas that may properly be considered as belonging to engineering sciences. In addition, there are areas of engineering science that are not listed.

Program Options

Honors program

The honors program in the College of Engineering offers all interested students an intellectual challenge consistent with ability and interests. Entering engineering students with high school averages or entrance examination scores within the top five percent are encouraged to join the program. Transfer students with superior academic records are also eligible and will be invited to join the honors program. Sophomores and juniors enrolled in engineering who are qualified for the honors program may, with the endorsement of a member of the engineering faculty and the approval of the honors program director, join the program.

Because all credits obtained in the honors program are applicable to degree requirements, participation in the honors program will not alter the time required for graduation for most students and should prove to be a stimulating experience. In addition to enrolling in honors sections in many courses, honors students may enroll in a variety of seminars, colloquia, and independent study problems designed to enrich and challenge each participant. The engineering honors program is closely integrated with the honors program of the other colleges at K-State and provides participation in special enrichment activities. Students in the honors program may elect to withdraw from the program at any time.

The college has approved the development of individual programs for students participating in the honors program. Such programs will be developed between the student and a faculty advisor. Engineering advisors are encouraged to seek out students qualifying for the honors program, learn of their academic potential and their special interests, and help them develop programs of study that will meet their academic and professional interests. The academic programs developed must be approved by the student's advisor and department head.

Entering freshmen with a composite ACT score of at least 29 or in the upper five percent of their high school graduating class will be invited to join the honors program. Transfer students with a cumulative GPA of 3.50 or greater in at least 12 semester hours and students with a K-State cumulative GPA of 3.50 or greater in at least 12 semester hours will also be invited to join. For a student to remain in the honors program, a minimum 3.50 composite GPA must be maintained. The student may be on probation from the honors program for one semester if the GPA falls below 3.50. A student may be reinstated to the program if the composite GPA is raised to 3.50 or above that semester. Students previously in the honors program but dropped because of a low GPA may be reinstated on petition from an engineering faculty member and with the approval of the director of the engineering honors program.

Diplomas and transcripts of students completing the engineering honors program will be inscribed "Honors Program." To complete the honors program, the student must qualify for an engineering degree with a composite GPA of at least 3.50 and must complete at least 4 semester hours of engineering honors courses including a minimum of 2 honors research hours.

Cooperative education

The College of Engineering, through its cooperative education program, offers students in engineering an opportunity to obtain experience in industry as an integral part of their formal education. After completing the freshman year, engineering students alternate sessions of work and study (alternating schedule), work part-time and go to school part-time (parallel schedule), or work more than one summer (summer schedule).

While the program may extend the time required to earn a degree by one year, students may obtain as much as 20 months of experience and earn a significant portion of their college expenses. Applications for the program are accepted through Career and Employment Services any time after the student is enrolled in the College of Engineering. Final selection is made through formal employment interviews with the participating companies.

Minors program

A minors program has been created to enable students to take 15 credit hours or more in an area of special interest outside their major field. Minors may be earned in a variety of areas including chemistry, leadership, business, computer science, and engineering management. Contact the College of Engineering Student Services Office for further information.

Upon completion of the requirements established by the faculty responsible for the minor field, an appropriate entry will be made on the student's transcript.

Minor in ergonomics/safety

A minor in ergonomics and safety emphasizes the consideration of the well being of the human being in industrial operations.

Required courses:

IMSE 242	Introduction to Manufacturing Engineering	3
	or	
IMSE 241	Production Processes	
IMSE 602	Topics in Industrial Engineering: Advanced Safety Principles	3
IMSE623	Industrial Ergonomics	3
IMSE 625	Work Environments	3
IMSE 610	Occupational Safety Engineering	3
		15

Minor in manufacturing systems

A minor in manufacturing systems provides knowledge about efficient manufacturing practices and current manufacturing techniques, methods and technologies. Students take four core courses and select at least one course from the manufacturing systems elective course list.

Required courses

Core courses:

IMSE 242	Introduction to Manufacturing Engineering	3
	or	
IMSE 241	Production Processes	
IMSE 563	Manufacturing Processes Engineering	4
IMSE 564	Product and Process Engineering	3
IMSE 662	Computer Aided Manufacturing	3
Elective courses:		
IMSE 541	Statistical Quality Control	3
IMSE 623	Industrial Ergonomics	3
IMSE 633	Production Planning and Inventory Control	3
IMSE 641	Statistical Process Control in Manufacturing	3
IMSE 643	Industrial Simulation	3
IMSE 671	Topics in Automated Factory Concepts	3
IMSE 672	Robotic Applications	3
IMSE 685	Principles of Manufacturing Information Systems	3
		16

Minor in engineering management

A minor in engineering management focuses on concepts, techniques, and tools applicable to the management of engineering work. Topics in the minor include: engineering economy, industrial management, operations research, and concepts in total quality management. Other engineering management topics may by selected for the elective course.

Required courses:

IMSE 501	Industrial Management	3
IMSE 530	Industrial Project Evaluation	3
	or equivalent	
IMSE 560	Introduction to Operations Research I	3
IMSE 605	Advanced Industrial Management	3

Elective courses (choose one)

STAT 511	Introduction to Probability and Statistics II	3
ACCTG 231	Accounting for Business Operations	3
MANGT 531	Personnel and Human Relations Management	3
MANGT 630	Labor Relations Law	3
SOCIO 647	Sociology of Work	3
PSYCH 560	Industrial Psychology	3
PSYCH 564	Psychology of Organization	3
PSYCH 625	Engineering Psychology	3
		15

Minor in digital systems

The Department of Electrical and Computer Engineering offers a minor in digital systems. The following courses are required with a grade of C or better.

EECE 241	Introduction to Computer Engineering	3
EECE 431	Microcontrollers	3
EECE 541	Design of Digital Systems I	3
EECE 543	Computer Systems Interfacing	1
EECE 643	Computer Engineering Design Lab	2
EECE 649	Computer Design I	3
		15

Students pursuing the degrees in B.S. in electrical engineering and B.S. in computer engineering are not eligible for this minor.

Minor in operations research

A minor in operations research develops knowledge of operations research techniques and challenges the student to appropriately apply mathematical models to solve complex engineering and management problems.

Required courses:

STAT 511	Introduction to Probability and Statistics I	3
IMSE 560	Introduction to Operations Research I	3
IMSE 633	Production Planning and Inventory Control	3
IMSE 643	Industrial Simulation	3
IMSE 660	Introduction to Operations Research II	3
		15

Minor in computing and information sciences

Required courses:

CIS 200	Fundamentals of Computer Programming	4
CIS 300	Algorithms and Data Structures	3
CIS 500	Analysis of Algorithms and Data Structures	3
Two additional 500- or 600-level courses in CIS		6
		16

Minority Engineering Program

The Minority Engineering Program (MEP) is a comprehensive program designed to identify, recruit, retain, educate, and graduate quality minority students with an aptitude for math and science, to provide a support base to foster academic and social growth, and to assist in the transition into corporate society upon graduation.

Minority engineering students are involved in key leadership positions within the College of Engineering and throughout the university. The MEP program provides: academic advising; scholarships, tutoring and peer counseling; internship, co-op and job placement assistance; leadership training and professional development, math and science workshops; and a study center.

Integrated master's degree

A five-year integrated program leading to a B.S. degree in any engineering field at the end of four years and a master of science degree at the end of five years is available for promising undergraduate students. In architectural engineering, the comparable numbers are five and six years.

Students who have completed the sophomore year and have outstanding scholastic records are invited to join the program. Each student, in consultation with a faculty advisor, will plan an individualized program of study that meets requirements for the B.S. and M.S. degrees. Features of the program include integrated planning, participation in research as an undergraduate, and enrollment in graduate-level courses in the senior year. Students participating in the program will be considered for financial assistance in the form of scholarships, fellowships, research assistantships, and part-time work.

Interdisciplinary Studies

Although engineering curricula are generally structured, it is possible to pursue a secondary field of interest through the judicious selection of electives. If added flexibility is needed to pursue specific goals, students may petition the advisor and department head for the substitution of required courses. Some of the more popular secondary areas are:

Bioengineering

Bioengineering is a broad field overlapping the life sciences and many engineering disciplines. Some of the subareas are biomechanics, ergonomics, bioinstrumentation, biomaterials, bioenergetics, water and waste treatment, food engineering, and environmental engineering. In addition to the courses listed in the pre-medicine section, other courses of interest include:

BAE 510	Environmental Design of Agricultural Buildings
BAE 521	Energy in Biological Systems
BAE 700	Agricultural Process Engineering
CHE 715	Biochemical Engineering
CHE 725	Biotransport Phenomena
CE 563	Environmental Engineering Fundamentals
CE 565	Water and Wastewater Engineering
CE 762	Water Treatment Processes
CE 766	Wastewater Engineering: Biological Processes
EECE 771	Control Theory Applied to Bioengineering
EECE 772	Theory and Techniques of Bioinstrumentation
EECE 773	Bioinstrumentation Laboratory
IMSE 623	Industrial Ergonomics
IMSE 625	Work Environments
ME 622	Environmental Engineering I
ME 722	Environmental Engineering II

Business administration

Increasing numbers of engineers are assuming managerial positions in all phases of industrial operations. Some of the courses listed in the section of dual degrees could be appropriate technical electives for students with goals in management.

Energy systems engineering

The increasing demand for energy is one of the major problems confronting all nations. New energy sources are needed in addition to more effective use of present resources. Interested students should select courses from the following areas: thermodynamics, energy conversion, nuclear reactor technology, electric energy systems, and engineering economics.

Pre-medicine

Many recent advances in medical research techniques, patient monitoring systems, artificial limbs and organs, and aerospace and undersea medicine have developed from the partnership of medicine and engineering. Engineering students wishing to satisfy entrance requirements to a typical school of medicine must take at least two semesters of biology and two semesters of organic chemistry, and should take additional social science/humanities electives. The pre-medical advisor in the College of Arts and Sciences should be consulted in the sophomore year.

Pre-law

A graduate degree in law can be desirable for engineers wishing to pursue careers in industrial management or patent law. While there are no specific courses required for entry to law school, appropriate elective areas are economics, political science, history, sociology, psychology, anthropology, accounting, and finance. The pre-law advisor in the College of Arts and Sciences should be consulted prior to the junior year.

Computer science

Computers are powerful tools for the solution of complex engineering and/or management problems. Individuals with training in both engineering and computer science possess the background to attack problems over a broad range of areas. Appropriate courses include:

Languages

CIS 200	Fundamentals of Computer Programming
CIS 300	Algorithms and Data Structures
CIS 350	Computer Architecture and Organization
CIS 505	Introduction to Programming Languages

Design

EECE 241	Introduction to Computer Engineering
EECE 444	Computer Engineering Laboratory I
EECE 544	Computer Engineering Laboratory II
EECE 641	Design of Digital Systems I

Computational techniques

CHE 316	Chemical Engineering Computational Techniques
IMSE 560	Introduction to Operations Research
IMSE 573	Industrial Simulation
ME 760	Engineering Analysis I
NE 696	Nuclear Systems Design

Mathematics, physics, and chemistry

Engineering students with interests in research should plan on graduate study. Preparation at the undergraduate (B.S.) level could be enhanced by additional courses in mathematics and the basic sciences. Refer to the departmental listings in the College of Arts and Sciences section for possible electives.

Food engineering

Engineers are needed in the food industry for process development and design, equipment design, and management of operations. Students should select technical electives to augment a background in chemistry, microbiology, agricultural and food sciences, and process engineering.

Natural resources/ environmental sciences secondary major

Increasing national and international concerns have generated opportunities for individuals to contribute to the resolution of environmental and resource problems. These issues are so complex that they lie beyond the scope of any one discipline.

The secondary major prepares students to apply broadly-based knowledge to the use, management, sustainability, and quality of soil, air, water, mineral, biological, and energy resources. See the Secondary Majors section of this catalog.

Dual Degrees

Students who want to pursue interdisciplinary interests in depth may wish to enroll in a dual degree program. There are no minimum semester hours required, but the requirements for both degrees must be satisfied. To complete two degrees in an optimum time, students should consult with an assistant dean in the Engineering Student Services Office at the earliest opportunity. Students will also be required to consult with the dean's office in the college from which the second degree is earned. Popular combinations are:

Engineering and business administration

The management option is the most popular, but the option in marketing is an excellent combination for the engineering student planning a career in technical sales. Because of course sequence requirements, students should begin the dual degree program in their sophomore year.

Instead of a dual degree, students with a 3.0 GPA or higher should consider an MBA, or the engineering management option of the M.S. degree in industrial engineering.

Agricultural engineering and grain science and industry

The two most popular options are feed science and management, and milling science and management.

Construction science and architecture

Students enrolled in architectural engineering and construction science and management programs that also earn a dual degree in architecture have additional opportunities in the building industry.

Civil engineering and geology

Students interested in specializing in foundation engineering are advised to complete the B.S. degree requirements in civil engineering plus the requirements to qualify for the B.S. degree in geology.

Chemistry and chemical engineering

In addition to the required courses in chemical engineering, interested students should take courses in foreign languages and chemistry to qualify for the B.S. degree in chemistry.

Electrical engineering and computer engineering

This dual degree allows a person to function across a wider range of technical areas.

Electrical engineering and mechanical engineering

Some job opportunities in the fields of energy, controls, and heating and air conditioning require the combined background of these two areas.

Support Services

Center for Effective Teaching

Richard R. Gallagher, Interim Associate Dean

The Center for Effective Teaching is organized to further the college's goal of excellence in teaching. The center sponsors programs to enhance teaching, including specialized training for young engineering educators, seminars in educational methods and techniques for all engineering faculty, student evaluation of undergraduate teaching, and monetary awards for excellence in teaching. The center is funded by private endowment.

The center's activities are coordinated by an advisory committee of students and faculty from the College of Engineering.

Research Centers

Engineering Experiment Station

Byron W. Jones, Director and Associate Dean for Research and Graduate Programs

The College of Engineering is committed to the concept that good teaching and good research complement each other to the benefit of the student, the public, and the faculty member. The experiment station is the division of the college responsible for the administration of research.

The research faculty of the experiment station is composed of members of all departments of the college. Researchers from the Engineering Experiment Station work closely with those from the Agricultural Experiment Station and with others from within the university on projects of mutual concern.

The activities of the Engineering Experiment Station are funded by state appropriations and by grants and contracts from governmental agencies and private industries.

Center for Energy Studies

N. Dean Eckhoff, Director

The center conducts interdisciplinary studies and provides leadership training in the planning, design, and operation of fuel production processes, power generation, and transportation and utilization systems, and in policy matters involving the management of energy resources.

The center carries out basic as well as mission-oriented studies on problems related to energy resources and power production, disseminates the results of these studies through seminars and publication of reports, and provides information to students and personnel from government and industry to upgrade their professional competence.

Center of Excellence, Advanced Manufacturing Institute

Farhad Azadivar, Director

The Advanced Manufacturing Institute assists in Kansas economic development through research, technology transfer, and technical assistance. AMI supports interdisciplinary research in advanced manufacturing technologies by faculty from the College of Engineering and other K-State colleges. Emphasis is on advanced technologies for manufacturing and production systems, computer- integrated and intelligent manufacturing systems, intelligent processing of engineered materials, and computer vision/image processing.

AMI supports cooperative research with industry to develop and transfer new technology from the laboratory to commercial producers. The institute also assists Kansas companies in expanding services, designing new products, and increasing productivity. A major component of AMI is the Integrated Design, Manufacture, and Assembly Lab. AMI is a Kansas Technology Enterprise Corporation Center of Excellence.

Center for Hazardous Substance Research

Larry E. Erickson, Director
Stanley C. Grant, Associate Director

The Center for Hazardous Substance Research is the regional headquarters for the Environmental Protection Agency's Great Plains and Rocky Mountain Hazardous Substance Research Center. The center provides a focal point for research and research communication. Specific goals and objectives are to: (1) provide leadership and foster the conduct of hazardous substance research, (2) have a point of contact for industrial and governmental officials with hazardous waste research concerns, (3) develop a professional staff of faculty members who can conduct contract and grant research for industry and government, (4) maintain safe and proper environment for the conduct of hazardous and toxic substance research, (5) furnish well-equipped laboratories for hazardous substance research, (6) generate opportunities for research training of students in the area of hazardous substance research, and (7) enhance the climate for economic development in Kansas for the waste processing industry.

Center for Transportation Research and Training

Eugene R. Russell, Sr., Director

The center conducts interdisciplinary research and training in the planning, design, and operation of rural and urban transportation systems.

The center carries out mission-oriented research concerning national, regional, state, and local transportation problems; disseminates the results of research through publication of reports and seminars for university, industry, and government representatives to assure that the results can and will be applied to the solution of practical transportation problems; and provides training to students and personnel from the transportation community to upgrade their professional competence.

The center also hosts an annual transportation conference for state and local public employees in the transportation sector.

In 1995, the U.S. Department of Transportation selected K-State to be one of five universities participating in the Region 7 Consortium for Transportation Research and Education-the mid-America Transportation Center. The consortium will coordinate over $3 million in a four state region.

In performing the stated missions of the center, systems analysis and synthesis techniques will be emphasized, and the safety, aesthetic, and environmental aspects of transportation systems will not be neglected.

Institute for Computational Research in Engineering and Science

J. Kenneth Shultis, Director

The Institute for Computational Research in Engineering and Science was established to promote computational research, to develop better research computing facilities, to provide administrative support for computer-oriented activities, and to foster cooperative efforts among members of K-State's research community.

The activities of ICRES are interdisciplinary in nature and span a wide range of research topics with emphasis on computer modeling and simulation. ICRES serves as a university-wide center for the exchange of computational techniques among researchers and for the development of computer facilities dedicated to research. The institute presently is serving as a focus to develop high-end computing capabilities to meet the needs of computational researchers in engineering and science.

Other objectives of the institute include preparation of research proposals for computational research; the encouragement of creative uses of computers; the dissemination of computing information through seminars, conferences and institute publications; and the development of software for engineering and scientific research.

Institute for Environmental Research

M.H. Hosni, Director
Elizabeth A. McCullough, Co-Director

The Institute for Environmental Research serves as a focal point for interdisciplinary research on thermal environmental engineering and the thermal interaction between people and their thermal environment.

The institute is administered by the College of Engineering and research is administered through the Engineering Experiment Station. It works in cooperation with academic departments from throughout the university. Faculty and students from these departments participate in the institute's research programs, use the facilities for their own research, and utilize the facilities for specialized graduate courses and seminars. Research funding is primarily from contracts with private companies and government agencies.

Research facilities are available for controlling and measuring thermal environmental parameters over a range of conditions, for measuring thermal characteristics of clothing, and for measuring human physiological variables.

Major facilities include: environmental chambers ranging in size from 45 to 420 square feet and with operating temperatures ranging from –30 to 150 degrees F.; thermal manikins for measuring clothing insulation; hot plates for measuring the thermal resistance of fabric or insulation systems; and an infrared thermal imaging system for measuring human body, clothing, or building surface temperature profiles.

Institute for Systems Design and Optimization

L. T. Fan, Director

The Institute for Systems Design and Optimization promotes interdisciplinary research, teaching, and communications in systems engineering.

The institute is administered through the College of Engineering and the Engineering Experiment Station and provides channels of communication between disciplines throughout the university in engineering systems design.

Specific objectives of the institute include interdisciplinary research; systems seminars and conferences; preparation of research proposals; and providing assistance in recruiting of graduate students, post-doctoral students, and faculty.

Nuclear Reactor Facility

Brendan Ryan, Manager

K-State has a TRIGA Mark II pulsing nuclear reactor, radiation instruments calibration facility, and a well-equipped neutron activation analysis laboratory within its Department of Nuclear Engineering. The reactor, which is licensed for steady-state operation to 250 kilowatts and pulsed operation to 250 megawatts, is used for teaching and research by many departments. The reactor is used in part for radiation effects studies, neuton radiography, fission-track studies, and for neutron activation analysis, an analytical technique that is essentially nondestructive and offers sensitivities better than one part per billion for some elements. Neutron activation analysis finds application in diverse fields such as diagnostic medicine, plant improvement studies, nutrition studies, age dating of geological specimens, forensics, toxicology, and metabolic studies.

Extension and Outreach

Engineering Extension Programs

Richard B. Hayter, Director

Engineering Extension Programs is a collection of services created to serve Kansans through the transfer of technology from the campus and laboratory to business and industry.

Engineering Extension reaches out through its own short courses, conferences, seminars, and workshops to provide information to audiences ranging from the lay public to users of sophisticated technology, including engineering and manufacturing personnel.

Engineering Extension's educational and training programs focus on energy and the environment. Energy information emphasizes construction and retrofit for energy efficiency, maintenance techniques in commercial and institutional buildings, building environmental control systems, and system design for energy efficiency. Engineering Extension targets these programs toward building designers, contractors, building operators, and owners.

In its environmental efforts, Engineering Extension focuses on pollution prevention, assisting Kansas businesses in removing wastes from their manufacturing processes in ways that are safer and more economical.

Engineering Extension also coordinates off-campus graduate courses by the College of Engineering. These courses can be available to the general public or be packaged as educational activities delivered for, and supported by, a specific industry or organization. Many of these courses are delivered electronically to educational sites in selected areas of Kansas.

General Engineering

Terry S. King, Dean
Tom C. Roberts, P.E., Assistant Dean
Ray E. Hightower, Assistant Dean

General engineering (DEN)

Entering freshmen who are undecided in their major in engineering may enroll in general engineering for one year. They will take the following program of study, which is completely applicable to all engineering programs. Undecided students are encouraged to select a major by the beginning of their sophomore year.

Fall semester

ENGL 100	Expository Writing I	3
CHM 210	Chemistry I	4
MATH 220	Analytic Geometry and Calculus I	4
DEN 160	Engineering Concepts	1
Humanities or social science elective		3
		15

Spring semester

SPCH 105	Public Speaking IA	2
CHM 230	Chemistry II	4
MATH 221	Analytic Geometry and Calculus II	4
ECON 110	Principles of Macroeconomics	3
Humanities or social science elective		3
		16

Courses in personal and professional development, engineering honors, minority engineering, and other student development programs are included in general engineering.

Courses related to the B.S. degree in nuclear reactor technology are also included in general engineering to support outreach programs to the nuclear power industry.

Nuclear reactor technology

This program provides the education necessary for careers associated with assisting engineers in the design, construction, inspection, maintenance, monitoring, and management of nuclear reactor power generation facilities. Primary employment positions are senior reactor operators and shift technical advisors. Other employment opportunities include similar responsibilities in medical and industrial facilities where radioactive materials are used.

Area of specialization (62 hours)

Required courses (48 hours)

CE 231	Statics A	3
CE 331	Strength of Materials A	3
CHM 230	Chemistry II	4
ET 410	Properties of Engineering Materials	2
ET 436	Digital Logic Systems I	4
ET 480	Materials of Nuclear Reactor Systems	2
ET 481	Nuclear Reactor Technology I	3
ET 482	Nuclear Reactor Technology Analysis	3
ET 512	Mechanics of Fluids	3
ET 514	Energy Conversion Technology	3
ET 534	Automatic Control Technology	3
ET 537	Electronic Measurements	4
ET 583	Nuclear Reactor Technology II	3
ET 584	Radiation Detection and Monitoring	3
ET 585	Nuclear Reactor Thermal Technology	3
ET 586	Radiation Protection Technology	2
Technical electives		10
Management electives		3
Free elective		1

General engineering courses

DEN 015. New Student Orientation Seminar. (0) I, II. Introduction to the College of Engineering. Emphasis is on new student (freshmen and transfer) transition to college life. Students obtain computer id's, information on college procedures (drop/add, curriculum change, and wait list), and receive guidance on how to become a successful student in the College of Engineering. NSOS has a lecture/small group discussion format and meets only 3–4 times at the beginning of the semester.

DEN 120. Minority Engineering Enrichment Seminar. (3) I. Introduction to the academic and intellectual demands of an engineering curriculum from a multicultural perspective. Develop group cohesiveness and an attitude of mutual support by engaging in collaborative learning. Help students acquire effective study methods, analyze/compare learning/teaching styles, prepare for and improve examination performance, promote optimum utilization of campus resources, develop leadership and communication skills and enhance self-esteem. Credit may not be applied towards an engineering degree.

DEN 160. Engineering Concepts. (1) I. An introduction to engineering and engineering design. Problems involving the basic concepts of engineering science are considered. one rec. and one seminar a week. Pr.: Two high school units of algebra, one high school unit of geometry, and one-half high school unit of trigonometry.

DEN 200. *Kansas State Engineer* Journalism. (1–2) I, II. Editorial and business staff work on the Kansas State Engineer. Pr.: Junior classification and consent of dean.

DEN 201. Amateur Radio Theory I. (1) I, II. Theory and practice of amateur ("ham") radio operation. Basics of radio electronics, antennas, FCC regulations, Morse code; successful completion of the course should ensure passing the FCC Novice and "no-code" technician examinations. Credit may not be applied toward an engineering degree. Two hours rec. a week for ten weeks. (Includes examinations).

DEN 202. Amateur Radio Theory II. (1) I, II. Theory and practice of amateur ("ham") radio operation. More basics of radio electronics, antennas, FCC regulations, Morse code; successful completion of the course should ensure passing the FCC General class examination. Credit may not be applied toward an engineering degree. One hour rec. and one hour Morse code lab a week. Pr.: DEN 201 or FCC Novice or "no-code" technician.

◆**DEN 210. History of Building and Construction.** (3) I. An introduction to the art and science of building. Historical review from ancient to contemporary including related construction methods, equipment, and systems. Three hours rec. a week.

DEN 220. Minority Engineering Colloquium. (1) II. Continuation of DEN 120. Emphasis on career exploration and development, introduction to graduate school options, preparation and responsibility for advising process, tips on breaking the failure cycle, behavior modification strategies, and developing and utilizing leadership skills. Credit may not be applied towards an engineering degree.

DEN 275. Introduction to Personal and Professional Development. (1) I, II. Overview of major topics related to personal and professional development, including communication, leadership, teamwork, total quality management, and ethics. One hour lec. and one hour activity a week. Pr.: Sophomore standing.

DEN 299. Honors Seminar in Engineering. (1) I, II. Selected topics of general interest. May be taken twice for credit by engineering honor students starting in the second semester of the freshmen year.

DEN 300. Introduction to Total Quality Management. (1) I, II. Overview of major topics related to Total Quality Management (TQM), including managerial and engineering aspects. One hour lec. a week. Pr.: MATH 100, sophomore standing. Cross-listed with MGMT 300.

DEN 398. Problems in Engineering and Technology. (Var.) I, II, S. A study of problems or topics in a specialized area of engineering or technology. Pr.: Approval of department head or dean.

DEN 399. Honors Colloquium in Engineering. (1) II. Selected topics of general interest. Open to students in the engineering honors program for one semester.

DEN 420. Introduction to Alternative Energy Sources. (3) II. Introduction to solar, geothermal, wind, tidal, thermal sea gradients, breeder reactor, and fusion energy sources. Concepts, devices, potential, economics, and status of each energy source. Introduction to the all-electric economy. Three hours rec. a week. Open to all nonengineering and first- and second-year engineering students.

DEN 425. Introduction to Energy and Environmental Technology. (2) I, II. An introductory course for nonengineering students. An introduction to the technology employed in analyzing energy and pollution control processes. The course emphasizes energy problems, control of water and air pollution, food and land use problems, and material recycling concepts. Not open to engineering students. Two hours lec. a week.

DEN 450. Impact of Technology on Society. (3) I, II. A study of social, economic, and environmental problems as a function of technology. Study of effect of various significant technological developments on present society and parallels with present developments. Study of current problems, detection of causes, and analysis of solutions. Implications for the future; governmental, industrial, and individual responsibility in detection of potential problems and methods of control or solution. Three hours rec. a week. Sophomore standing or above.

DEN 499. Honors Research in Engineering. (1) I, II. Individual research problem selected with approval of faculty advisor. Open to seniors in the engineering honors program for two semesters. Written report is presented at end of second semester.

DEN 550. Engineering Law. (3) I, II. An introduction to concepts of law pertinent to engineering practice. These include contracts, torts, products liability, business associations, engineering licensing, real and personal property law, commercial law, and taxes. Three hours rec. a week. Pr.: Junior standing.

◆**DEN 582. Natural Resources/Environmental Sciences Project (NRES).** (3) I, II. A comprehensive project in NRES. Requires integration of information and understanding acquired in NRES secondary major courses. Students must prepare and present written and oral reports. Three hours rec. a week. Pr.: ENGL 415, SPCH 105. Pr. or conc.: 15 hours of approved courses in NRES secondary major. Cross listed with DAS 582 and GENAG 582.

Nuclear engineering technology courses

ET 480. Materials of Nuclear Reactor Systems. (2) On sufficient demand. The properties and behavior of fuel and nonfuel materials used in nuclear reactor systems are considered. Selected nuclear fuel cycle topics are covered. Two hours rec. a week. Pr.: ET 410.

ET 481. Nuclear Reactor Technology I. (3) On sufficient demand. Introduction to nuclear and neutron physics, including: interaction of neutrons, gamma rays, and beta and alpha particles with matter; production of neutrons and the neutron life cycle; basic neutron diffusion principles; and the nuclear fuel cycle. Three hours rec. a week. Pr.: PHYS 114, STAT 320.

ET 482. Nuclear Reactor Technology Analysis. (3) On sufficient demand. Applied numerical analysis emphasizing solutions of elementary differential equations with a very strong emphasis on applications in nuclear reactor technology. Three hours rec. a week. Pr.: MATH 211 or equiv.

ET 583. Nuclear Reactor Technology II. (3) On sufficient demand. Theory of diffusion and slowing down of neutrons with application to subcritical and critical reactors; introduction to the time behavior of reactor systems. Three hours rec. a week. Pr.: ET 481.

ET 584. Radiation Detection and Monitoring. (3) On sufficient demand. Principles of operation of detectors used in the measurement and monitoring of ionizing radiation. Three hours rec. a week. Pr.: ET 480.

ET 585. Nuclear Reactor Thermal Technology. (3) On sufficient demand. Introduction to conduction, convection, and radiation heat transfer as applied to reactor cores and systems. Consideration of nuclear reactor safety and power reactor systems. Three hours rec. a week. Pr.: ET 481.

ET 586. Radiation Protection Technology. (2) On sufficient demand. A study of radiation protection environmental effects of radiation and an introduction to nuclear reactor shielding. Two hours rec. a week. Pr.: ET 584.

Architectural Engineering/ Construction Science and Management

Clarence Waters, Head

Professors Bissey,* Burton,* and Knostman; Associate Professors Goddard, Hayter, Moser, Riblett, Roberts,* and Waters;* Assistant Professors Fritchen, Goodman, and Tredway; Instructors Hafling, Pacheco, and Wipplinger; Emeriti: Professors Dahl, Hodges, Lindley, Mingle, and Thorson; Associate Professor Blackman.

http://www.engg.ksu.edu/AREDEPT/home.html

Pre-professional programs admission

New students, including transfer students, should submit the standard application form directly to the Office of Admissions. The admission criteria are the same as those for the university and the College of Engineering.

Any student who has completed more than 15 credit hours at Kansas State University in any major outside the Department of Architectural Engineering and Construction Science may change majors into either pre-professional program provided that the student has a resident cumulative GPA of 2.3 or better.

Admission to the professional programs

There are two distinct and separate pre-professional programs within the department, the pre-professional architectural engineering program and the pre-professional construction science and management program, each containing different course requirements. Other than course requirements specific to each program, the general procedures for acceptance into the respective professional program are similar and are described in the following paragraphs.

The pre-professional students must complete the first portion of the program prior to taking any upper-division professional program courses. An application to the professional program must be submitted to the the Department of Architectural Engineering and Construction Science by the end of the eighth week of either the spring or fall semester. This submission will be immediately prior to the student's pre-enrollment into any of the upper-division professional program courses. All courses in the lower-division pre-professional program core of the program of application, valid at the time the student entered the university, must be completed and all grade criteria must be met by the end of the semester that the application is submitted. An exception to this rule is the student who expects to complete these criteria during the summer term. Those students should also make application in the spring semester prior to pre-enrollment. All eligible applicants will be allowed to pre-enroll into professional program courses with the understanding that they will be dropped if they do not complete the requirements for admission to the professional program prior to the beginning of the subsequent semester. Applications will be reviewed by the department's Academic Affairs Committee and accepted or rejected as soon as possible after semester grades are issued.

Course requirements

Applicants must meet the following criteria for admission to the professional program of the curriculum as follows:

1. The student has achieved a GPA of 2.3 or better in all of the courses in the lower-division pre-professional program core and courses which apply to the professional program, and;
2. has earned a grade of credit (CR) in a departmental seminar for each semester that the applicant was enrolled in the lower-division pre-professional program core, and;
3. has completed the following courses (or equivalent) with grades of C or better:

Architectural engineering

MATH 220	Analytical Geometry and Calculus I
MATH 221	Analytical Geometry and Calculus II
MATH 222	Analytical Geometry and Calculus III
MATH 240	Elementary Differential. Equations
CHEM 210	Chemistry I
CHEM 230	Chemistry II
PHYS 213	Engineering Physics I
PHYS 214	Engineering Physics II
ENVD 205	Graphics I
ENVD 206	Graphics II
GEOL 100	Earth in Action
DEN 210	History of Building and Construction
CNS 320	Construction Materials
CNS 210	Introduction to Construction Computer Programming
CE 333	Statics
ENGL 100	Expository Writing I
SPCH 105	Public Speaking IA
ECON 110	Principles of Macro-Economics

Construction science

MATH 220	Analytical Geometry and Calculus I
PHYS 113	General Physics I
PHYS 114	General Physics II
ENVD 205	Graphics I
ENVD 206	Graphics II
GEOL 100	Earth in Action
DEN 210	History of Building and Construction
CNS 320	Construction Materials
CE 212	Elementary Surveying
CNS 210	Introduction to Construction Computer Programming
CE 231	Statics A
ENGL 100	Expository Writing I
SPCH 105	Public Speaking IA
ECON 110	Principles of Macro-Economics
ACCTG 231	Accounting for Business Operations

None of the above courses in math, chemistry, or physics may be repeated more than once, with the exception of MATH 220.

Academic standards

After admission to the professional program, students will be subject to the following academic standards that are more stringent than those for the university.

1. *Warning of unsatisfactory progress*
Regardless of the overall GPA, a student with any D or F grade in any term or who has a term GPA below 2.3 will receive a warning of unsatisfactory progress. This warning will be removed if the student earns C grades or better in at least 12 credit hours of core courses with no D or F grades during the next semester in residence.

A student whose cumulative resident GPA drops below a 2.3 will receive a warning of unsatisfactory progress. This warning will be removed if the student raises his or her cumulative resident GPA to 2.3 or above during the following term.

2. *Suspension from the professional program for unsatisfactory progress*
Regardless of the overall GPA, a student who has received a warning of unsatisfactory progress will be suspended from the professional program for unsatisfactory progress if he or she receives a D or F or earns below a 2.3 semester GPA for the second consecutive term.

A student whose cumulative resident GPA has dropped below 2.3 and has received a warning of unsatisfactory progress will also be suspended from the professional program if he or she does not raise his or her cumulative resident GPA to 2.3 or above during the following semester. A suspended student may not enroll in any Department of Architectural Engineering and Construction Science courses.

A suspended student must change to the pre-professional program or to another major. A suspended student who intends to appeal for removal of a suspension and reapply to the professional program must change to the pre-professional program. The suspended student may reapply to the professional program after one semester of suspension. The suspended student must take 15 hours of technical courses, to be selected by the Academic Affairs Committee of the department and the student's advisor, and achieve a minimum GPA of 2.5 during the "layout semester" to be eligible to reapply for the professional program.

Any appeal for removal of a suspension may be made by filing an appeal form with the head of the Department of Architectural Engineering and Construction Science at least one week prior to the first day of fee payment. The department head may reject any application or may submit it to the Academic Affairs Committee for consideration. Any and all actions on applications submitted by the department head will be made by the Academic Affairs Committee of the department in a hearing in which the student will be interviewed.

If a suspended student is readmitted to the professional program, any subsequent grade of D or F during any subsequent term will result in permanent suspension from the professional program.

The warning and suspension referred above are departmental actions that are separate and distinct from the university's academic warning and academic dismissal. Grades earned during an intersession will not be considered in the determination of unsatisfactory academic progress.

Architectural engineering

The architectural engineering program is planned for students who are particularly interested in the engineering aspects of building design. Architectural engineers must be sympathetic with the practical, functional, and aesthetic possibilities of contemporary materials, and with mechanical, electrical, plumbing, and structural systems. As important members of building design teams, they must be able to create designs that will answer the economic, safety, and aesthetic requirements of a project.

Included in the academic program are exercises in many of the courses beginning in the freshman year and continuing through the fifth year to develop skills in the engineering design process. The last course in this sequence is Senior Project, a culmination of all the previous design experiences from the first four and one-half years of the curriculum. Architectural engineers must have a working ability with total and system design concepts.

Curriculum in architectural engineering (ARE)

Bachelor of science in architectural engineering
162 hours required for graduation
Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

Pre-professional program (PARE)

Freshman

Fall semester

ENVD 205	Graphics I	2
ENGL 100	Expository Writing I	3
MATH 220	Analytic Geometry and Calculus I	4
CHM 210	Chemistry I	4
DEN 210	History of Building and Construction	3
ARE 020	Architectural Engineering Seminar	0
		16

Spring semester

ENVD 206	Graphics II	2
MATH 221	Analytic Geometry and Calculus II	4
CHM 230	Chemistry II	4
ECON 110	Principles of Macroeconomics	3
SPCH 105	Public Speaking IA	2
KIN 101	Principles of Physical Fitness	1
ARE 020	Architectural Engineering Seminar	0
		16

Sophomore

Fall semester

CNS 320	Construction Materials	2
PHYS 213	Engineering Physics I	5
MATH 222	Analytic Geometry and Calculus III	4
CNS 210	Introduction to Construction Computer Programming	3
ENGL 200	Expository Writing II*† or	
Humanities or social science elective		3
ARE 020	Architectural Engineering Seminar	0
		17

Spring semester

ART 100	2D Design or	3
ART 200	3D Design	3
CE 333	Statics	3
PHYS 214	Engineering Physics II	5
MATH 240	Elementary Differential Equations	4
GEOL 100	Earth in Action	3
ARE 020	Architectural Engineering Seminar	0
		18

Professional program (ARE)

Junior

Fall semester

CNS 321	Construction Techniques and Detailing	3
ME 512	Dynamics	3
CE 533	Mechanics of Materials	3
CE 534	Mechanics of Materials Lab	1
ME 513	Thermodynamics I	3
ARE 532	Lighting Systems Design	2
ARE 020	Architectural Engineering Seminar	0
		15

Spring semester

CNS 325	Construction Drawing	3
ARE 537	Acoustic Systems	2
CE 537	Introduction to Structural Analysis	4
ARE 534	Thermal Systems	3
CE 212	Elementary Surveying Engineering	3
ARE 020	Architectural Engineering Seminar	0
		15

Senior

Fall semester

ARE 411	Architectural Engineering Design	3
ENGL 415	Written Communications for Engineers†	3
EECE 519	Electrical Circuits and Control	4
ARE 524	Theory of Structures II	3
Humanities or social science elective (upper level)†		3
ARE 020	Architectural Engineering Seminar	0
		16

Spring semester

ARE 523	Timber Structure	2
ARE 536	Plumbing/Fire Protection System Design	3
ARE 528	Theory of Structures III	3
ARE 533	Building Electrical Systems	3
ME 571	Fluid Mechanics	3
Complementary elective		3
ARE 020	Architectural Engineering Seminar	0
		17

Fifth year

Fall semester

ARE 590	Integrated Building System Design	3
CE 522	Soil Mechanics I	3
ARE 640	Building Mechanical Systems	3
Complementary elective		5
Free Elective†		4
ARE 020	Architectural Engineering Seminar	0
		18

Spring semester

ARE 690	Senior Project	3
ARE 539	Architectural Engineering Management	3
Complementary elective		5
Humanities or social science elective(upper level)†		3
ARE 020	Architectural Engineering Seminar	0
		14

*Expository Writing II is optional if prerequisites for Written Communications for Engineers (ENGL 415) are met from Expository Writing I.

†Not considered part of the pre-professional program or professional program.

Humanities and social science electives are to be selected from the approved catalog list. From the areas listed, at least two advanced level courses must be taken. See catalog requirements.

Complementary electives are to be selected from the approved departmental lists.

Construction science and management

The construction science and management program prepares students to be professional constructors, managers of personnel resources, financial resources, materials, and machines. The curriculum is an engineering-based management program designed to produce technically competent managers of construction. Entering students should have a background in mathematics and physics.

The program prepares graduates to execute the designs created by engineers and architects. Graduates may enter fields of general, heavy and highway, utility, mechanical, or electrical construction. Their education provides the fundamental engineering and management skills necessary for success in any of the above areas.

Constructors work in many settings. For example, as a principal in a small construction firm, a constructor may engage in many of the activities in management, whereas a constructor in a large firm may concentrate exclusively on only one or two of the activities. Most students in the program intend to enter building, heavy/highway, or utility construction fields. Other roles, such as construction education, will normally require an advanced degree and/or professional experience.

Through construction education, students attain a level of construction knowledge that would otherwise require decades of practical experience to develop. With this level of knowledge, graduates typically move rapidly into upper management positions in construction organizations.

Curriculum in construction science and management (CNSM)

Bachelor of science in construction science and management
134 hours required for graduation
Accredited by the American Council for Construction Education

Pre-professional program (PCNSM)

Freshman

Fall semester

ENVD 205	Graphics I	2
MATH 220	Analytic Geometry and Calculus I	4
DEN 210	History of Building and Construction	3
SPCH 105	Public Speaking IA	2
ENGL 100	Expository Writing I	3
GEOL 100	Earth in Action	3
CNS 016	Construction Seminar	0
		17

Spring semester

ENVD 206	Graphics II	2
PHYS 113	General Physics I	4
CE 212	Elementary Surveying Engineering	3
CNS 320	Construction Materials	2
ECON 110	Principles of Macroeconomics	3
Humanities or social science elective†		3
CNS 016	Construction Seminar	0
		17

Sophomore

Fall semester

CE 231	Statics A	3
PHYS 114	General Physics II	4
CNS 210	Introduction to Construction Computer Programming	3
ACCTG 231	Accounting for Business Operations	3
ENGL 200	Expository Writing II*† or	
Humanities or social science elective		3
KIN 101	Principles of Physical Fitness	1
CNS 016	Construction Seminar	0
		17

Professional program (CNSM)

Spring semester

CE 331	Strength of Materials	3
CE 332	Strength of Materials Lab	1
CNS 221	Construction Technology and Detailing	3
CNS 330	Site Construction	3
MANGT 390	Business Law I†	3
Humanities or social science elective (upper level)†		3
CNS 016	Construction Seminar	0
		16

Junior

Fall semester

CNS 522	Theory of Structures	3
CNS 325	Construction Drawings	3
CNS 536	Water Supply and Plumbing	3
CNS 534	Heating and Air Conditioning	3
ARE 537	Acoustic Systems	2
Management elective (general)†		
CNS 016	Construction Seminar	0
		17

Spring semester

CNS 523	Timber Construction	2
CNS 540	Construction Methods and Equipment	3
CNS 535	Electrical Service and Installation	3
ENGL 415	Written Communications for Engineers†	3
Management elective (labor)†		3
CNS 650	Construction Safety	2
CNS 016	Construction Seminar	0
		16

Senior

Fall semester

CNS 524	Steel Construction	3
CNS 640	Construction Operations	3
CNS 641	Construction Estimating	3
CNS 642	Construction Management	3
Management elective		3
Professional elective		2
CNS 016	Construction Seminar	0
		17

Spring semester

CNS 528	Concrete and Masonry Construction	3
CNS 645	Construction Scheduling and Cost Control	2
CE 322	Soil and Foundation Construction	3
Management or professional elective		3
Professional elective		3
Humanities or social science elective (upper level)		3
CNS 016	Construction Seminar	0
		17

*Expository Writing II is optional if prerequisites for Written Communications for Engineers (ENGL 415) are met from Expository Writing I.

†Not considered part of the pre-professional program or professional program.

Humanities and social science electives are to be selected form the approved catalog list. From the areas listed, at least two advanced level courses must be taken.

Management electives and professional electives are to be selected from approved departmental lists.

Architectural engineering courses

ARE 020. Architectural Engineering Seminar. (0) I, II. Presentation of professional problems and practices by students, faculty, and professionals associated with the career of architectural engineering. One hour lec. a month.

ARE 100. Architectural Engineering Orientation. (2) II. Introduction to architectural engineering; emphasis on relationship of architectural engineering to the building industry. Two hours lec. a week.

ARE 311. CAD in Engineering and Construction. (2) I, II. On sufficient demand. Basics of CAD and the applications to the engineering and construction industry. Two hours lecture and six hours lab a week (7 week course). Pr.: CNS 210.

ARE 411. Architectural Engineering Design. (3) I, II. Principles and elements of design; synthesis of structural, mechanical, electrical, lighting, sanitary, and construction systems, considering interrelationship in performance and economics. Two hours rec. and three hours lab a week. Pr.: ART 100, 190, CNS 325.

ARE 499. Honors Research in Architectural Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering honors program. A report is presented orally and in writing during the last semester.

ARE 523. Timber Structures. (2) I, II. Analysis and design of timber structures using solid and laminated materials. Two hours rec. a week. Pr.: CE 537.

ARE 524. Theory of Structures II. (3) I. Analysis and design of metal structures; emphasis on buildings. Two hours rec. and three hours lab a week. Pr.: CE 537.

ARE 528. Theory of Structures III. (3) II. Design of reinforced concrete building frames; footings, columns and floor systems, attention being given to costs and economical design. Two hours rec. and three hours lab a week. Pr.: CE 537.

ARE 532. Lighting Systems Design. (2) I. Study of human needs in lighting, lighting sources, lighting systems design, and application. Two hours rec. a week. Pr.: PHYS 114 or 214.

ARE 533. Building Electrical Systems. (3) II. Study of basic design of building electrical systems including circuit design, power distribution and service equipment, communications systems, and special electrical systems. Three hours rec. a week. Pr.: EECE 519.

ARE 534. Thermal Systems. (3) I, II. Study of man's physiological needs, principles of heat transfer, principles of building thermal balance, comfort systems, and space-use relationships involving heating, ventilating, and cooling as integral parts of architectural engineering design. Three hours a week. Pr.: PHYS 214 and CNS 321.

ARE 536. Plumbing/Fire Protection Systems Design. (3) I, II. Sewage disposal systems, building plumbing and fire protection systems, space relationships, equipment requirements as related to architectural design, structural systems, construction materials, and techniques. Three hours rec. a week. Pr.: PHYS 213 and CNS 321.

ARE 537. Acoustic Systems. (2) I, II. Hearing and the ear, sound generation, acoustical correction, noise reduction, and sound transmission all as integral parts of architectural design. Two hours rec. a week. Pr.: PHYS 113 or 213.

ARE 539. Architectural Engineering Management. (3) I, II. General business and management procedures. Drawings, specifications, and conceptual estimating. Contracts, bonds, liability, arbitration, and insurance. Project financing. Three hours rec. a week. Pr. or conc.: ARE 590.

ARE 590. Integrated Building System Design. (3) I, II. Methods for integration and coordination of structural, mechanical, electrical and lighting systems in the building architectural design process. Two hours rec., three hours lab per week. Pr.: ARE 411.

ARE 620. Problems in Architectural Engineering. (Var.) I, II, S. A study of specific design problems under the direct supervision of a member of the architectural engineering faculty. Pr.: Approval of the department head.

ARE 640. Building Mechanical Systems. (3) I. Study of heat gain using computers, pump laws, fan laws, various types of HVAC air systems, chilled water systems, heat pump systems, refrigeration, introduction to mechanical system controls. Two hours rec. and two hours lab a week. Pr.: ARE 534, or Pr. or Conc.: ME 571.

ARE 690. Senior Project. (3) I, II. Student working individually with laboratory support will prepare and present a project of appropriate scope and complexity with emphasis on structural, mechanical, acoustical, electrical and lighting requirements. Nine hours lab a week. Pr.: ARE 523, 524, 528, 532, 533, 534, 536, 537, 590, and 640.

ARE 710. Building Energy Analysis. (V) I. Study of building energy consumption and current modeling techniques to analyze overall energy usage including: auditing of existing buildings, economic evaluation and energy efficient system selection for new construction. Two or three rec. hours a week. Pr.: ARE 534.

ARE 720. Topics in Architectural Engineering. (V) I, II, S. A study of specific design problems in architectural engineering. Pr.: or conc.: ARE 590.

ARE 724. Advanced Sanitation Systems. (3) I. Water quality and treatment, pressure control, and hydraulics in domestic water and waste systems. Three hours rec. a week. Pr.: ARE 536 or CNS 536.

ARE 731. Advanced Lighting Design. (3) I. Design of all types of building lighting including exterior and site lighting. Calculations and layout utilizing zonal cavity, point by point, and computer-assisted lighting calculations methods. Three hours rec. a week. Pr.: ARE 635.

ARE 734. Building Thermal Systems Design. (3) II. Design and specifications of selected thermal and mechanical systems for structures. The course uses all the modern techniques of thermal/mechanical system design for buildings. Students are required to develop term research design projects. Two hours rec. and three hours lab a week. Pr.: ARE 640.

ARE 735. Electrical Systems Design. (3) II. Complete design and specifications of electrical systems for a selected structure. The course uses the National Electrical Code in conjunction with all the modern techniques of electrical systems design for buildings. Students are required to develop term research design projects. Two hours rec. and three hours lab a week. Pr.: ARE 533.

ARE 740. Environmental Control Systems in Buildings. (3) II. Electric, electronic, and pneumatic control systems to optimize energy usage and environmental comfort in buildings. Three hours rec. a week. Pr.: ARE 640 and EECE 519.

ARE 742. Communications and Energy Management Systems Design. (3) II, on sufficient demand. Detailed design and analysis of special electrical systems for buildings including, but not limited to, energy management, fire alarm, and communication systems. Three hours rec. a week. Pr.: ARE 735.

ARE 760. Masonry Structural Design. (3) II. Introduction to masonry materials, specifications, testing and construction methods. The design of unreinforced and reinforced masonry structures according to applicable building codes. Three hours rec. a week. Pr.: ARE 528 or equivalent first course in reinforced concrete design.

ARE 780. Theory of Structures IV. (3) II. Continuation of Theory II and III, with special emphasis on the complete problem of the structure as a whole. Three hours a week. Pr.: CE 537 and ARE 523, 524, and 528.

Construction science and management courses

CNS 016. Construction seminar. (0) I, II. Presentation of professional problems and practices by students, faculty, contractors, architects, and various organizations associated with the building industry. One hour lec. a month.

CNS 210. Introduction to Construction Computer Programming. (3) I, II. Computer and disk operating systems, programming techniques, and spread sheets for construction applications. Pr.: MATH 150, two hours rec. and two hours lab a week.

CNS 320. Construction Materials. (2) I, II. Study and analysis of construction materials, their properties, selection, and use. Two hours rec. a week. Pr.: ENVD 205.

CNS 321. Construction Techniques and Detailing. (3) I, II. Study of construction methods and procedures in the assembly of building materials. Nine hours lab a week. Pr.: ENVD 206, CNS 210 and 320.

CNS 325. Construction Drawings. (3) I, II. Production of a set of construction drawings. Emphasis on construction procedures. Introduction to shop drawings. Nine hours lab a week. Pr.: CNS 321.

CNS 330. Site Construction. (3) I, II. Study of site construction problems and procedures, site survey and investigations, review of site plans, construction layouts, earthwork calculation, excavation/shoring methods, computer applications. Two hours rec. and three hours lab a week. Pr.: CE 212, CNS 210, ENVD 206, PHYS 113.

CNS 499. Honors Research in Construction Science. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering honors program. A report is presented orally and in writing during the last semester.

CNS 510. Computer Applications in Construction Science. (V) I, II. On sufficient demand. Applications of specialized computer techniques to the solution of problems in construction science. By appointment. Pr.: CNS 210.

CNS 522. Theory of Structures. (3) I, II. The elastic analysis of determinate and indeterminate structures. Emphasis on equilibrium equations, shear and moment diagrams, and solving forces in trusses. Includes solutions of indeterminate structures by moment distribution and matrix stiffness method with microcomputer applications. Three hours rec. a week. Pr.: CE 331.

CNS 523. Timber Construction. (2) I, II. Principles of design, fabrication, and erection of timber structures including both solid and laminated materials. Two hours rec. a week. Pr.: CNS 522.

CNS 524. Steel Construction. (3) I, II. Principles of design, fabrication, and erection of structural steel in conformance with codes. Two hours lec. and three hours lab a week. Pr.: CNS 522.

CNS 528. Concrete and Masonry Construction. (3) I, II. Principles of design, fabrication, and erection of concrete and masonry structures. Two hours lec. and three hours lab a week. Pr.: CNS 522.

CNS 534. Heating and Air Conditioning. (3) I, II. Principles of designing, applying, installing, and estimating heating and air conditioning systems for buildings. Three hours rec. a week. Pr.: PHYS 113 and CNS 321.

CNS 535. Electrical Service and Installation. (3) II. Basic design and construction of building electrical, lighting, and distribution systems with emphasis on the National Electrical Code and installation. Three hours rec. a week. Pr.: PHYS 114 and CNS 321.

CNS 536. Water Supply and Plumbing. (3) I, II. Principles and practices of plumbing and fire protection systems in buildings including code requirements and estimating. Three hours rec. a week. Pr.: PHYS 113 and CNS 321.

CNS 540. Construction Methods and Equipment. (3) I, II. Operations, costs, productivity of construction equipment. Investments/life cycle costing of the equipment. Equipment selection criteria and analysis. Construction methods. Three hours rec. a week. Pr.: CNS 321 and 330. Pr. or conc.: CNS 522.

CNS 544. Problems in Construction Science. (Var.) I, II, S. A study of specific design problems under the direct supervision of a member of the construction science faculty. Pr.: Junior standing.

CNS 545. Heavy Construction Methods. (3) I. Principles of asphalt, asphalt and concrete paving operations, concrete batch plant operations, heavy construction equipment, and applications. Three hours recitation a week. Pr.: CNS 325 and 540.

CNS 634. Building Systems Installation and Commissioning. (3) I, on sufficient demand. Principles and methods for proper installation, commissioning and maintaining of efficient performance of mechanical, plumbing, fire protection, electrical, and lighting systems in buildings. Three hours rec. a week. Pr.: CNS 534, 535, and 536.

CNS 640. Construction Operations. (3) I, II. Shop drawing and submittal processes, field and office practices, change orders, construction safety standards and practice, pre-construction planning, expediting, short-interval planning. Two hours rec. and three hours lab a week. Pr.: CNS 325 and 540. Conc.: CNS 641.

CNS 641. Construction Estimating. (3) I, II. Understanding estimating procedures, quantity surveying, specification reviews, pricing of an estimate, market analysis, subcontractor and supplier solicitation, and risk management, following the CSI format. Nine hours lab a week. Pr.: CNS 325 and 540.

CNS 642. Construction Management. (3) I, II. An introduction to the business of construction; study of legal considerations, contract documents, bonds and insurance. Evaluation of the characteristics of the construction firm, organization structure, and financial performance. Three hours rec. a week. Pr.: CNS 540.

CNS 644. Topics in Construction Management. (V) I, II. On sufficient demand. Topical material of importance in the management of construction such as marketing, ethics, personnel management, etc. Pr. or conc.: CNS 642.

CNS 645. Construction Scheduling and Cost Control. (2) I, II. Construction cost reporting and control. Construction planning, both long-term and short-interval, construction scheduling, monitoring, and controlling. Computer applications. One hour rec. and two hours lab a week. Pr.: CNS 640, 641, and 642.

CNS 650. Construction Safety. (2) II, on sufficient demand. Introduction to safety and safety programs, workers' compensation, OSHA organization and structure, safety policies and record keeping, safety standards. Emphasis will be on communication and job-site safety management. On-site safety inspections will be required with in class presentations and written reports to be submitted. Two hours rec. a week. Pr. or conc.: CNS 535 and 540.

CNS 738. Mechanical and Electrical Estimating. (2) II. Techniques of mechanical and electrical building systems estimating. Procedure for evaluating relative costs of different systems. Development of computer-aided finite and conceptual estimating techniques. Two three-hour labs a week. Pr.: ARE 534 or CNS 534, ARE 536 or CNS 536, and Pr. or conc.: ARE 533 or CNS 535.

Biological and Agricultural Engineering

Jim Koelliker, Head

Professors Chung,* G. Clark,* Harner,* Murphy, Powell, Rogers, Schrock,* Slocombe,* Spillman,* and Steichen;* Associate Professors Taylor and Zhang;* Assistant Professors Barnes, Kalita,* Maghirang,* and Mankin;* Adjunct Professor Steele;* Adjunct Associate Professors Chang* and Hagen;* Adjunct Assistant Professors Martin and Wagner;* Emeriti: Professors Clark, Fairbanks, Holmes, Jepsen, Larson, Manges, and Wendling; Associate Professors Baugher, Black, Stevenson, TenEyck, and Thierstein.

http://www.engg.ksu.edu/BAEDEPT/home.html

Biological and agricultural engineering is the field that applies engineering science and technology, as well as biological sciences, to food and fiber production, processing, and distribution systems. Biological and agricultural engineers provide an essential link between the biological sciences and engineering, which uses physical science to solve practical problems. Engineering fundamentals are applied to achieve the goal of a safe and stable food supply while considering human and environmental factors. Three curriculum options are available.

General option with area of specialization

Biological and agricultural engineers develop techniques and equipment for using land and water resources to produce and process an array of biological products, including food, fiber, energy, chemical feedstocks, and pharmaceuticals. The increasing demand for agricultural products must be met within the constraints of greater competition for reduced land, water, and energy resources.

Balancing the conflicting needs of society will require engineers trained to apply engineering science in the control and management of biological processes. The first two years of study in the general option concentrate on mathematics, physical sciences, and biological sciences. The third and fourth years contain additional engineering science courses as well as technical electives that allow the student to pursue his or her specific interests. These areas are machinery systems, grain and feed processing, natural resources and environment, and structures and environment.

Environmental option

Biological and agricultural engineers work at the interface between biology and engineering. They must be knowledgeable in both disciplines. Applications in the environmental option include water quality studies of lakes, rivers, and groundwater, soil and water conservation, irrigation and drainage, system design and management, waste treatment, management of air quality inside buildings and outside, remediation of land damaged by construction, mining, and other uses.

The environmental option focuses on the design and management of systems that use or impact natural resources. Non-point pollution issues have long been a component of agricultural engineering programs. Soil conservation programs began in the 1930s, long before the environmental movement began. Non-point pollution sources still impact the environment, requiring biological and agricultural engineering expertise to develop solutions to those problems. This option is distinct from but interfaces with the environmental option in civil engineering.

Secondary major in natural resources and environmental sciences

Students enrolled in biological and agricultural engineering, regardless of option, may participate in the natural resources and environmental sciences secondary major. Courses used for the secondary major may also be used for completing regular graduation requirements. Details are found in the Natural Resources and Environmental Sciences section of this catalog.

Food engineering option

Students pursuing the food engineering option can fulfill the requirements for a B.S. in agricultural engineering by following the food engineering option outline. Inherent in this program is the basic background of biological and agricultural engineering with emphasis in food processing, packaging, and handling.

Agricultural technology management

Description and curriculum outline are listed in the College of Agriculture section of this catalog.

Curriculum in biological and agricultural engineering (BAE)

Bachelor of science in biological and agricultural engineering
135 hours required for graduation
Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

General option

Freshman

Fall semester

BAE 200	Engineering Methods	1
ECON 110	Principles of Macroeconomics	3
ENGL 100	Expository Writing I	3
CHM 210	Chemistry I	4
MATH 220	Analytic Geometry and Calculus I	4
BAE 020	Engineering Assembly	0
		15

Spring semester

BIOL 198	Principles of Biology	4
SPCH 105	Public Speaking 1A	2
MATH 221	Analytic Geometry and Calculus II	4
CHM 230	Chemistry II	4
BAE 020	Engineering Assembly	0
		14

Sophomore

Fall semester

MATH 222	Analytic Geometry and Calculus III	4
PHYS 213	Engineering Physics I	5
CHM 350	General Organic Chemistry	3
NE 385	Engineering Computational Techniques	2
ENGL 200	Expository Writing II* or	3
Elective		3
BAE 020	Engineering Assembly	0
		17

Spring semester

BAE 500	Properties of Biological Materials	2
MATH 240	Elementary Differential Equations	4
PHYS 214	Engineering Physics II	5
ME 212	Engineering Graphics I	2
Biology elective		3
BAE 020	Engineering Assembly	0
		16

Junior

Fall semester

BAE 510	Environmental Design of Agricultural Buildings	3
ME 513	Thermodynamics I	3
AGRON 305	Soils	4
CE 530	Statics and Dynamics	4
Humanities or social science elective		4
BAE 020	Engineering Assembly	0
		18

Spring semester

BAE 512	Functional Analysis of Agricultural Machinery	3
BAE 521	Energy in Biological Systems	3
ME 571	Fluid Mechanics	3
ENGL 415	Written Communications for Engineers*	3
CE 533	Mechanics of Materials	3
Humanities or social science elective		3
BAE 020	Engineering Assembly	0
		18

Senior

Fall semester

BAE 536	Agricultural Engineering Design I	3
BAE 575	Fundamentals of Agricultural Process Engineering	3
EECE 519	Electric Circuits and Controls	4
BAE 530	Natural Resources Engineering	3
Technical elective		2
Design technical elective		3
BAE 020	Engineering Assembly	0
		18

Spring semester

Humanities or social science electives		6
Technical elective		3
Design technical elective		3
Biology elective		3
BAE 640	Instrumentation and Control for Bio. Systems	3
BAE 020	Engineering Assembly	0
		18

*Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from Expository Writing I. Elective is restricted to only a technical elective.

Humanities and social science electives are to be selected from the approved list and need not be taken in the order listed in the curriculum (usually two courses must be 300 level or above).

Technical electives are to be chosen with the advice and approval of the faculty advisor and department head and to include two courses in biological and agricultural engineering.

Environmental option

Freshman

Fall semester

ENGL 100	Expository Writing I	3
CHM 210	Chemistry I	4
MATH 220	Analytic Geometry and Calculus I	4
SPCH 105	Public Speaking 1A	2
BAE 200	Engineering Methods	1
Humanities or social science elective		3
BAE 020	Engineering Assembly	0
		17

Spring semester

MATH 221	Analytic Geometry and Calculus II	4
ECON 110	Principles of Macroeconomics	3
CHM 230	Chemistry II	4
ME 212	Engineering Graphics	2
Humanities or social science elective		3
BAE 020	Engineering Assembly	0
		16

Sophomore

Fall semester

MATH 222	Analytic Geometry and Calculus III	4
PHYS 213	Engineering Physics I	5
BIOL 198	Principles of Biology	4
AGRON 305	Soils	4
BAE 020	Engineering Assembly	0
		17

Spring semester

MATH 240	Elementary Differential Equations	4
PHYS 214	Engineering Physics II	5
BAE 500	Properties of Biological Materials	2
CE 530	Statics and Dynamics	4
NE 385	Engineering Computational Techniques	2
BAE 020	Engineering Assembly	0
		17

Junior

Fall semester

CE 563	Environmental Engineering Fundamentals	3
ME 513	Thermodynamics I	3
CHM 350	General Organic Chemistry	3
BAE 551	Hydrology	2
CE 553	Hydrologic Methods Laboratory	1
ENGL 120	Expository Writing II	3
Technical electives		3
BAE 020	Engineering Assembly	0
		18

Spring semester

BIOL 455	General Microbiology	4
EECE 519	Electric Circuits and Control	4
BAE 521	Energy in Biological Systems	3
ME 571	Fluid Mechanics	3
Humanities or social science elective		3
BAE 020	Engineering Assembly	0
		17

Senior

Fall semester

BAE 690	Non-Point Pollution Engineering	3
BAE 575	Fundamentals of Agricultural Process Engineering	3
BAE 536	Agricultural Engineering Design I	3
ENGL 415	Written Communications for Engineers*	3
Technical elective		4
BAE 020	Engineering Assembly	0
		16

Spring semester

BAE 530	Natural Resources Engineering	3
BAE 651	Air Pollution Engineering	3
Humanities or social science electives		4
BAE 640	Instrumentation and Control for Bio Systems	3
Design technical elective		3
BAE 020	Engineering Assembly	0
		16

*Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from Expository Writing I. Elective is restricted to only technical elective, humanities or social science elective, or ROTC.

Humanities and social science electives are to be selected from the approved list and need not be taken in the order listed in the curriculum (two courses must be 400 level or above).

Technical electives are to be chosen with the advice and approval of the faculty advisor and department head.

Food engineering option

Freshman

Fall semester

ENGL 100	Expository Writing I	3
CHM 210	Chemistry I	4
MATH 220	Analytic Geometry and Calculus I	4
BAE 200	Engineering Methods	1
SPCH 105	Public Speaking IA	2
Humanities or social science elective		3
BAE 020	Engineering Assembly	0
		17

Spring semester

CHM 230	Chemistry II	4
MATH 221	Analytic Geometry and Calculus II	4
ECON 110	Principles of Macroeconomics	3
NE 385	Engineering Computational Techniques	2
Technical elective		2
BAE 020	Engineering Assembly	0
		15

Sophomore

Fall semester

MATH 222	Analytic Geometry and Calculus III	4
PHYS 213	Engineering Physics I	5
BIOL 198	Principles of Biology	4
CHM 350	General Organic Chemistry	3
BAE 020	Engineering Assembly	0
		16

Spring semester

MATH 240	Elementary Differential Equations	4
PHYS 214	Engineering Physics II	5
CE 530	Statics and Dynamics	4
CHE 314	Introduction to Process Analysis	3
BAE 020	Engineering Assembly	0
		16

Junior

Fall semester

CHE 520	Chemical Engineering Thermodynamics I	2
BIOL 455	General Microbiology	4
CHM 585	Physical Chemistry I	3
BIOCH 521	General Biochemistry	3
BAE 575	Fundamentals of Agricultural Process Engineering	3
ENGL 200	Expository Writing II* or	
Elective		3
BAE 020	Engineering Assembly	0
		18

Spring semester

CHE 521	Chemical Engineering Thermodynamics II	3
ME 571	Fluid Mechanics	3
BAE 512	Functional Analysis of Agricultural Machinery	3
BAE 500	Properties of Biological Materials	2
BAE 625	Thermal Processing Operations in Food Engineering	3
ASI 411	Introduction to Food Chemistry	3
BAE 020	Engineering Assembly	0
		17

Senior

Fall semester

EECE 510	Circuit Theory I	3
ENGL 415	Written Communication for Engineers*	3
CHE 550	Chemical Reaction Engineering	3
BAE 510	Environmental Design of Agricultural Buildings	3
BAE 536	Agricultural Engineering Design I	3
Humanities or social science elective		3
BAE 020	Engineering Assembly	0
		18

Spring semester

BAE 521	Energy in Biological Systems	3
BAE 635	Food Plant Design	3
CHE 626	Bioseparation	2
Design technical elective		2
Humanities or social science electives		7
BAE 020	Engineering Assembly	0
		17

*Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from Expository Writing I. Elective is restricted to technical elective, humanities or social science elective, or ROTC.

Humanities and social science electives are to be selected from the approved list and need not be taken in the order listed in the curriculum (usually two courses must be 300 level or above).

Technical electives are to be chosen with the advice and approval of the faculty advisor and department head.

The engineering science requirements will be satisfied by the required courses in this curriculum.

Biological and agricultural engineering courses

BAE 020. Engineering Assembly. (0) I, II. Presentation of professional problems and practices by students, faculty, and professionals associated with the career of biological and agricultural engineering. One hour lec. a month.

BAE 200. Engineering Methods. (1) I. Engineering approach to problem solving, computer use in biological and agricultural engineering, solving and plotting calculus problems on the computer, differential leveling, and topographic mapping. Three hours lab a week. Pr. or conc.: MATH 220.

BAE 499. Honors Research in Biological and Agricultural Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering honors program. A report is presented orally and in writing during the last semester.

BAE 500. Properties of Biological Materials. (2) II. Characterization of biological material properties that affect the design and analysis of material handling equipment and processes. Physical, electrical, thermal, mechanical, aerodynamic, hygroscopic, and rheological properties of grain and other agricultural products will be examined. One hour rec. and three hours lab a week. Pr.: PHYS 213.

BAE 510. Environmental Design of Agricultural Buildings. (3) I. Theory and application of psychometrics, air dilution, and heat and mass transfer; study of animal's interaction with its environment; computer-aided design and analysis of environmental control systems for plants and animals. Two hours rec. and three hours lab a week. Pr.: BAE 200. Pr. or conc.: ME 513.

BAE 512. Functional Analysis of Agricultural Machinery. (3) II. Kinematics, power transmission, and basic hydraulics as applied to tillage, planting, and harvesting machinery. Two hours rec. and three hours lab a week. Pr.: ME 512 or CE 530.

BAE 521. Energy in Biological Systems. (3) II. Energy and material balances, process analysis and efficiency. Combustion, steam generation, fuel properties, and exhaust emissions. Net energy analysis and environmental consequences of biological production and processing systems. Analysis and design of systems for the production of biomass fuels. Three hours rec. a week. Pr. or conc.: ME 513.

BAE 530. Natural Resources Engineering. (3) II. Principles and measures for controlling storm water runoff and soil erosion; design of water handling structures for land drainage, flood protection, and irrigation; agricultural surveying. Two hours rec. and three hours lab a week. Pr.: BAE 551, AGRON 305; Pr. or conc.: ME 571.

BAE 536. Agricultural Engineering Design I. (3) I. Analysis and design of equipment and systems for the production and processing of food and fiber. Introduction to structural and process analysis using finite element techniques and engineering economics. Concepts of mechanical design, system design, human factors, and reliability in design are applied in a project-oriented laboratory. Two hours rec. and three hours lab a week. Pr.: ME 512 or CE 530.

BAE 551. Hydrology. (2) I, II. A study of the sources of supply and movement of underground and surface waters. Two hours rec. a week. Pr.: PHYS 113 or 213. Same as CE 551.

BAE 566. Design of Agricultural Structures. (3) II. Application of statics and strength of materials to the design and analysis of light-frame structures of wood, steel, and concrete; estimation of wind, snow, grain, and soil loads; stress analysis of beams, columns, frames, trusses, and foundations; computer-aided drafting and introduction to finite element analysis. Three hours rec. a week. Pr.: CE 533.

BAE 575. Fundamentals of Agricultural Process Engineering. (3) I. Application of basic science and engineering fundamentals for the analysis and design of agricultural processes. Two hours rec. and three hours lab a week. Pr. or conc.: CHE 314 or ME 571.

BAE 620. Problems in Agricultural Engineering. (Var.) I, II, S. Problems in the design, construction or application of machinery or power in agriculture, structures, modern conveniences, and rural electrification. Pr.: Approval of instructor.

BAE 625. Thermal Processing Operations in Food Engineering. (3) II, in odd years. Analysis of thermal processing operations such as drying, evaporation, canning, freezing, and freeze drying. Two hours rec. and three hours lab a week. Pr.: CHE 530 or BAE 575.

BAE 635. Food Plant Design. (3) II, in even years. Synthesis and design of different food processing plants such as cereal, dairy, fruit, and vegetable. Two hours rec. and three hours lab a week. Pr. or conc.: BAE 625.

BAE 636. Agricultural Engineering Design II. (Var.) II. Fabrication, evaluation, and refinement of a prototype machine or device designed in BAE 536. Pr.: BAE 536.

BAE 640. Instrumentation and Control for Biological Systems. (3) II. Fundamentals of instrumentation and control engineering applied in biological and agricultural systems and processes. Time-domain analysis and frequency response methods. Sensors and actuators in feedback control systems. Control system design. Case studies. Two hours rec. and three hours lab a week. Pr.: EECE 510 (or EECE 519) and MATH 240.

BAE 651. Air Pollution Engineering. (3) II. Air pollution legislation, standards, measurement, and terminology. Design and economics of particulate pollution control systems including cyclones, fabric filters, wet scrubbers, and electrostatic precipitators. Abatement of gas and vapor pollution using VOC incineration, gas adsorption, and gas absorption. Meteorology and atmospheric dispersion modeling. Three hours rec. a week. Pr.: ME 513, 571.

BAE 690. Non-Point Pollution Engineering. (3) I. Management of diffuse sources of pollution generally resulting from storm water and runoff. Use of models and Geographic Information Systems (GIS) to evaluate the extent and magnitude of non-point pollution, legislation and programs affecting non-point pollution, and design of treatment and management systems. Non-point pollutants addressed include: nutrients, pesticides, sediment, and hazardous wastes. Three hours lec. a week. Pr.: BAE 551 or CE 551.

BAE 700. Agricultural Process Engineering. (3) II. Theory, equipment, and design techniques in processing agricultural products. Two hours rec. and three hours lab a week. Pr.: BAE 575.

BAE 705. Irrigation Engineering. (3) II. Design and operative problems on the fundamentals of irrigation system design and management. Soil, plant, and water relationships; pipeline and system hydraulic design; design of irrigation systems; filtration systems and chemigation; sources of water and water quality. Two hours rec. and three hours lab a week. Pr.: BAE 551 and AGRON 305. Pr. or conc.: ME 571.

BAE 712. Analysis and Design of Off-Highway Vehicles. (3) II, in odd years. Analytical study of design, testing, construction, and operating characteristics of off-highway vehicles and machinery. Includes human factors, mobility, and precision agriculture. Two hours rec. and three hours lab a week. Pr.: BAE 536 or ME 574.

BAE 840. Measurement Systems. (3) I. Theory and application of measurement systems for biological and agricultural systems with emphasis on sensors and data-acquisition systems for measurement of variables related to soils, plants, animals, machines, and processes. Two hours rec. and three hours lab a week. Pr.: BAE 640.

Chemical Engineering

S. Gehrke,* Head

Professors Akins,* Erickson,* Edgar,* Fan,* Glasgow,* Schlup,* and Walawender;* Associate Professor Fox*; Assistant Professors Jiang* and Yu; Emeriti: Professors Kyle and Matthews.

http://www.engg.ksu.edu/CHEDEPT/home.html

Chemical engineers contribute to society by providing an essential link between the basic chemical sciences and commercial production. Chemical engineers find employment in the chemical and allied industries including energy, petrochemical, biotechnology, agricultural chemical, food, pharmaceutical, environmental, and semiconductor.

The objective of the chemical engineering program is to prepare qualified students for a professional career in chemical engineering. The curriculum is best suited to highly motivated students with superior abilities in chemistry, physics, and mathematics. Graduates of the program will have a working knowledge, including safety and environmental aspects, of the following engineering topics: material and energy balances applied to chemical processes; thermodynamics of physical and chemical equilibria; heat, mass and momentum transfer; chemical reaction engineering; continuous and stage-wise separation operations; process dynamics and control; and modern computing techniques.

The curriculum culminates in a major design experience and is structured to satisfy the criteria of the Accreditation Board for Engineering and Technology. Qualified graduates of the program desiring to do advanced study at other universities should be able to compete well.

Dual degree program

The Department of Chemical Engineering offers a five-year dual degree program in chemistry/chemical engineering. The program may be pursued entirely at K-State, requiring a minimum of 150 credit hours, or a portion of the requirements may be completed at other colleges. In particular, a formal cooperative program exists between K-State and Pittsburg State University in which students spend the first three years at PSU and the last two at K-State. Other dual degree programs are also available.

Areas of concentration

If a student desires to emphasize a particular area such as biochemical, food, computer and systems, energy, materials, or environmental engineering, there are three possibilities: areas of emphasis, minors, and secondary majors.

For an area of emphasis the student selects appropriate technical electives. Lists of recommended technical electives for some of the common choices for emphasis are available in the department office.

A student may also acquire a minor in an area of concentration or complete requirements for admission to medical or law school. Interested students should consult the Pre-Professional Programs section of this catalog. A student may complete requirements for a secondary major in an area such as natural resources and environmental sciences. Other opportunities are described in the Secondary Majors section of this catalog.

Selection of technical electives and choices for areas of concentration should be made in consultation with the academic advisor.

Curriculum in chemical engineering (CHE)

Bachelor of science in chemical engineering
134 hours required for graduation
Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

Freshman

Fall semester

ENGL 100	Expository Writing I*	3
CHM 220	Chemical Principles I	5
MATH 220	Analytic Geometry and Calculus I	4
Elective		3
SPCH 105	Public Speaking IA	2
CHE 015	Engineering Assembly	0
		17

Spring semester

CHM 250	Chemical Principles II	5
MATH 221	Analytic Geometry and Calculus II	4
ECON 110	Principles of Macroeconomics I	3
Elective		6
CHE 015	Engineering Assembly	0
		18

Sophomore

Fall semester

MATH 222	Analytic Geometry and Calculus III	4
PHYS 213	Engineering Physics I	5
CHM 531	Organic Chemistry I	3
CHE 316	Chemical Engineering Computational Techniques I	1
Elective		3
CHE 015	Engineering Assembly	0
		16

Spring semester

MATH 240	Elementary Differential Equations	4
PHYS 214	Engineering Physics II	5
CHM 550	Organic Chemistry II	3
CHE 320	Introduction to Process Analysis	3
CHM 532	Organic Chemistry Lab	2
CHE 015	Engineering Assembly	0
		17

Junior

Fall semester

CHM 585	Physical Chemistry I	3
CHM 586	Physical Chemistry I Lab	2
CHE 520	Chemical Engineering Thermodynamics I	2
CHE 530	Transport Phenomena I	3
Elective		6
CHE 015	Engineering Assembly	0
		16

Spring semester

CHM 595	Physical Chemistry II	3
ENGL 415	Written Communication for Engineers*	3
CHE 522	Chemical Engineering Lab I	2
CHE 521	Chemical Engineering Thermodynamics II	3
CHE 531	Transport Phenomena II	3
Elective		3
CHE 015	Engineering Assembly	0
		17

Senior

Fall semester

CHE 516	Chemical Engineering Computational Techniques II	1
CHE 532	Chemical Engineering Lab II	2
CHE 560	Separational Process Design	3
CHE 550	Chemical Reaction Engineering	3
CHE 570	Chemical Engineering Systems Design I	2
Elective		6
CHE 015	Engineering Assembly	0
		17

Spring semester

CHE 542	Chemical Engineering Lab III	3
CHE 561	Chemical Process Dynamics and Control	3
CHE 571	Chemical Engineering Systems Design II	4
Elective		6
CHE 015	Engineering Assembly	0
		16

*The prerequisite for ENGL 415 is satisfied with an A or B in ENGL 100. Otherwise students must take ENGL 200, which may be substituted for 3 credit hours of technical electives.

Thirty-three hours of electives are required and they are to be selected in consultation with the student's advisor. Fifteen of these hours are to be selected from the approved list of humanities and social sciences (two courses must be 400 level or above). Nine hours must satisfy the engineering science requirements, and the remaining nine hours are selected to enhance the student's professional development. All electives must have the approval of the department head and technical electives must meet the engineering science requirements.

Chemical engineering courses

CHE 015. Engineering Assembly. (0) I, II.

CHE 316. Chemical Engineering Computational Techniques I. (1) I, II, S. Application of computational methods including programming to chemical engineering problems. Three hours lab a week. Pr. or conc.: MATH 221.

CHE 320. Introduction to Process Analysis. (3) I, II. An introduction to chemical engineering with emphasis on material and energy balances. Three hours rec. a week. Pr. or conc.: MATH 240 and CHE 316.

CHE 350. Engineering Materials. (2) I, II. Structures of metals, ceramics, glasses, polymers, semiconductors, and composites. Mechanical, electrical, and magnetic properties. Multiphase equilibrium and modification of properties through changes in microstructure. Two hours rec. a week. Pr.: CHM 230. Pr. or conc.: PHYS 213.

CHE 352. Engineering Materials I. (3) I, II. Structure of metals, ceramics, glasses, polymers, semiconductors, and composites. Mechanical, electrical, and magnetic properties. Multiphase equilibrium and modification of properties through change in microstructure. Two hours rec. a week and three hours lab a week. Pr.: CHM 230. Pr. or conc.: PHYS 213.

CHE 356. Corrosion. (1) I, II. An introductory survey of corrosion mechanisms and prevention. Emphasis is on the corrosion of metals. One hour rec. a week. Pr.: CHE 350 or 352.

CHE 499. Honors Research in Chemical Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering honors program. A report is presented orally and in writing during the last semester.

CHE 516. Chemical Engineering Computational Techniques II. (1) I. Application of computational methods with emphasis on simulation to chemical engineering problems. Three hours of lab a week. Pr.: CHE 316 and conc.: CHE 550 and 560.

CHE 520. Ch.E. Thermodynamics I. (2) I. A study of the first and second laws of thermodynamics, real gases, heat of solution and reaction. Two hours rec. a week. Pr.: CHE 320. Pr. or conc.: CHM 585.

CHE 521. Ch.E. Thermodynamics II. (3) II. A continuation of the study of the second law, thermodynamic analysis of processes, phase equilibrium, chemical reaction equilibrium. Three hours rec. a week. Pr.: CHE 520.

CHE 522. Chemical Engineering Laboratory I. (2) II. Laboratory experiments on momentum and heat transfer. Five hours lab a week. Pr.: CHE 520 and 530.

CHE 530. Transport Phenomena I. (3) I. A unified treatment of the basic principles of momentum, energy, and mass transport. Three hours rec. a week. Pr.: CHE 320 and MATH 240.

CHE 531. Transport Phenomena II. (3) II. Continuation of Transport Phenomena I with special emphasis on mass transfer. Three hours rec. a week. Pr.: CHE 530.

CHE 532. Chemical Engineering Laboratory II. (2) I. Laboratory experiments on heat and mass transfer. Five hours lab a week. Pr.: CHE 521 and 531.

CHE 542. Chemical Engineering Laboratory III. (3) II. Laboratory experiments on classical unit operations, e.g., distillation, absorption, extraction, and on chemical kinetics and process dynamics. Eight hours lab a week. Pr.: CHE 516, 550, and 560. Pr. or conc.: CHE 561.

CHE 550. Chemical Reaction Engineering. (3) I. Applied chemical kinetics and catalysis including the analysis and design of tubular, packed bed, stirred tank, and fluidized bed chemical reactors. Three hours rec. a week. Pr.: CHE 521 and 531. Conc.: CHE 516.

CHE 560. Separational Process Design. (3) I. Development of the basic theory and design of separational processes such as distillation, gas absorption, liquid extraction, adsorption, and ion exchange. Three hours rec. a week. Pr.: CHE 521 and 531. Conc.: CHE 516.

CHE 561. Chemical Process Dynamics and Control. (3) II. A study of the unsteady state behavior and control of chemical processes. Three hours rec. a week. Pr.: CHE 550 and 516.

CHE 570. Chemical Engineering Systems Design I. (2) I. Basic concepts of process economics with application to the design of chemical processes. Two hours rec. a week. Pr. or conc.: CHE 550 and 560.

CHE 571. Chemical Engineering Systems Design II. (4) II. Basic concepts of process optimization with application to the synthesis and design of chemical processing systems. Emphasis will be on the solution of comprehensive systems design problems. Two hours rec. and six hours lab a week. Pr.: CHE 516, 550, 560, and 570. Pr. or conc.: CHE 561.

CHE 580. Problems in Chemical Engineering or Materials Science. (Var.) I, II, S. An introduction to chemical engineering research. Pr.: Approval of department head.

CHE 626. Bioseparations. (2) II, in even years. Study of separations important in food and biochemical engineering such as leaching, extraction, expression, absorption, ion exchange, filtration, centrifugation, membrane separation, and chromatographic separations. Two hours rec. a week. Pr.: CHE 531 or AGE 575.

CHE 648. Processing of Composite Materials. (3) I, II. Principles of composite materials, including ceramic, metal, and polymer matrix composites; properties and processing of fibers; role of interfaces in composites; basic concepts in mechanics, failure, and testing of composite materials. Three hours lec. a week. Pr.: CHE 350 or 352.

CHE 650. Hazardous Waste Engineering Seminar. (1) I, II, S. Topics in hazardous materials management and control, waste reduction and minimization, hazardous substance tracking, and hazardous waste engineering. One hour rec. a week. Pr.: CHM 230.

CHE 653. Ceramic Materials. (3) I, II. Structure and bonding in glasses and ceramics; phase equilibria and transformation kinetics; defects and microstructure within ceramic materials; mechanical, thermal, optical, electrical, and magnetic properties of ceramics and glasses. Three hours rec. a week. Pr.: CHE 350 or 352.

CHE 661. Processing of Materials for Solid State Devices. (3) I, II. Structure, properties, and processing of materials for solid state devices. Crystal growth, epitaxy, oxidation, diffusion, lithography, and etching as applied to device fabrication. Three hours rec. a week. Pr.: CHE 350 or 352.

CHE 664. Electrochemical Engineering. (3) I, II. Thermodynamics, electrode kinetics, and transport phenomena of electrochemical systems. Three hours rec. a week. Pr.: CHE 521 and 531.

CHE 681. Engineering Materials II. (3) I, II, S. The structure and bonding in crystalline and amorphous materials; crystallography; thermodynamic stability in materials; equilibrium diagrams and the phase rule; rate theory and kinetics of solid-state transformations; mechanical behavior of engineering materials; dislocations; failure mechanisms. Three hours lec. a week. Pr.: CHE 350 or 352.

CHE 682. Surface Phenomena. (2) I, II, S. Principles and applications of interfacial phenomena, including capillarity, colloids, porosity, adsorption, and catalysis. Two hours rec. a week. Pr.: CHE 520.

CHE 715. Biochemical Engineering. (3) I. The analysis and design of biochemical processing systems with emphasis on fermentation kinetics, continuous fermentations, aeration, agitation, scale up, sterilization, and control. Three hours rec. a week. Pr. or conc.: CHE 550.

CHE 725. Biotransport Phenomena. (3) I, II. Principles of transport phenomena applied to biological and physiological processes. Membrane transport processes, circulatory system transport phenomena, transport and distribution of drugs. Pr.: CHE 530.

CHE 735. Chemical Engineering Analysis I. (3) I, II, S. The mathematical formulation of problems in chemical engineering using partial differential equations, vector and tensor notation. Solution of these problems by analytical and numerical methods. Three hours rec. a week. Pr.: CHE 530.

CHE 745. Analysis of Physiological Processes. (3) II. Principles of process and systems analysis applied to problems in biology and medicine. Analysis of mixing in-flow systems, principles and applications of tracer analysis, analysis of kinetic and adsorption processes. Pr.: CHE 550.

Civil Engineering

Stuart E. Swartz, Head

Professors Cooper,* Hu,* Mathews,* Russell,* Snell,* and Swartz;* Associate Professors Hossain,* Melhem,* Najjar,* Reddi,* and Stokes;* Assistant Professors Bhandari and Starrett;* Emeriti: Professors McCormick, Smith, and Williams.

http://www.engg.ksu.edu/CEDEPT/home.html

Civil engineering is the engineering of constructed facilities and systems. Because civil engineering is broad in scope, many civil engineers develop specialties within the broad field. The civil engineering department offers three options within the B.S. in civil engineering degree.

Program goals

The objective of the civil engineering program is to prepare graduates for professional careers in civil engineering. A major goal is to provide civil engineering students with the best possible education toward that end within the guidelines provided by the Accreditation Board for Engineering and Technology (ABET) General Criteria and the ABET Program Criteria for Civil Engineering. Within this framework, further goals are to instill in the students a sensitivity to the social and humanistic implications of technology, and to motivate them to make worthwhile contributions to the profession and to society.

The civil engineering curriculum provides: (1) an understanding of basic sciences, mathematics and communications skills; (2) an understanding of the basic principles associated with each of the following civil engineering areas included within our program: environmental engineering, geotechnical engineering, structural engineering, transportation engineering, and water resources engineering; (3) an introduction to the methodologies of current design practice in these areas; (4) design experiences in the application of these methodologies while at the same time emphasizing the generality of the basic principles which supercede specific design approaches; (5) a sequence of courses in the humanities and social sciences to provide breadth and depth; and (6) an understanding of the ethical, social, and economic factors in professional engineering practice.

General option

The general option allows the student to pursue a B.S. in civil engineering degree in a broader general program or, if a specific career objective has been identified, to concentrate on one or more areas within the general option. The following areas of concentration are available:

Water resources—design and construction of reservoirs, canal systems, and dams for flood control, irrigation, power, and water supply.

Geotechnical—foundations for structures, earth embankments, retaining walls and bulkheads, and pavements for highways and airports.

Environmental—protection of public health and environmental quality through planning and designing facilities for water treatment and distribution; wastewater, solid and hazardous wastes collection, treatment, and disposal; and air pollution control.

Transportation—planning, design, and construction of highways, railways, airports, and urban mass transit systems.

Structures—design and construction of a variety of buildings and bridges, as well as the structural framing of aircraft, ships, and space vehicles.

Students choosing the general option can fulfill the requirements for a B.S. in civil engineering by following the course curriculum as well as the following selection of courses:

CE 411	Route Location and Design	4
Option elective		12–15
C.E. electives		12

CE electives must be chosen from those listed below, and must include at least one course in four of the five areas:

Environmental

CE 565	Water and Wastewater Engineering

Geotechnical

CE 528	Foundation Engineering

Structural

CE 542	Structural Engineering in Steel
CE 544	Structural Engineering in Concrete

Transportation

CE 572	Highway Engineering and Management

Water resources

CE 552	Hydraulic Engineering

Construction engineering option

This option allows students to obtain a B.S. in civil engineering while preparing more specifically for employment in the construction industry.

Students choosing the construction engineering option can fulfill the requirements for a B.S. in civil engineering by following the course curriculum listed for civil engineering as well as the following selection of courses:

ACCTG 231	Accounting for Business Operations	3
ACCTG 241	Accounting for Investing and Financing	3
DEN 550	Engineering Law	3
CE 411	Route Location and Design	4
CE 528	Foundation Engineering	3
CE 542	Structural Engineering in Steel	3
CE 544	Structural Engineering in Concrete	3
CE 641	Civil Engineering Materials	3
CE 680	Economics of Design and Construction	3
Option elective		0–3

Environmental option

This option allows students to obtain a B.S. in civil engineering while preparing more specifically for career opportunities with firms and governmental agencies actively engaged in environmental engineering practice.

Students choosing the environmental option can fulfill the requirements for a B.S. in civil engineering by following the course curriculum listed for civil engineering as well as the following selection of courses:

BIOL 198	Principles of Biology	4
CHM 531	Organic Chemistry I	3
CHE 352	Engineering Materials I	3
CE 528	Foundation Engineering	3
CE 544	Structural Engineering in Concrete	3
CE 552	Hydraulic Engineering	3
CE 565	Water and Wastewater Engineering	3
Option elective		6–9

Curriculum in civil engineering (CE)

Bachelor of science in civil engineering
134 hours required for graduation
Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

Freshman

Fall semester

MATH 220	Analytic Geometry and Calculus I	4
CHM 210	Chemistry I	4
ENGL 100	Expository Writing I*	3
ECON 110	Principles of Macroeconomics I	3
ME 212	Engineering Graphics I	2
DEN 015	New Student Orientation Seminar	0
		16

Spring semester

MATH 221	Analytic Geometry and Calculus II	4
CHM 230	Chemistry II	4
Option elective***		4
NE 385	Engineering Computational Techniques	2
GEOL 100	Earth in Action	3
CE 015	Engineering Assembly	0
		17

Sophomore

Fall semester

MATH 222	Analytic Geometry and Calculus III	4
PHYS 213	Engineering Physics I	5
ENGL 200	Expository Writing II*	
	or	
Option elective***		2
SPCH 105	Public Speaking IA	2
CE 212	Elementary Surveying Engineering	3
CE 015	Engineering Assembly	0
		17

Spring semester

MATH 240	Elementary Differential Equations	4
PHYS 214	Engineering Physics II	5
STAT 490	Statistics for Engineering	1
CE 333	Statics	3
Option elective***		2
CE 380	Computer Applications in Civil Engineering	1
DEN 275	Introduction to Personal/Professional Development	1
CE 015	Engineering Assembly	0
		17

Junior

Fall semester

ME 512	Dynamics	3
ME 513	Thermodynamics I	3
CE 551	Hydrology	2
CE 553	Hydrologic Methods Lab	1
CE 533	Mechanics of Materials	3
CE 534	Mechanics of Materials Lab	1
Option elective***		4
CE 015	Engineering Assembly	0
		17

Spring semester

CE 537	Introduction to Structural Analysis	4
ME 571	Fluid Mechanics	3
CE 522	Soil Mechanics I	3
CE 563	Environmental Engineering Fundamentals	3
ENGL 415	Written Communication for Engineers*	3
CE 015	Engineering Assembly	0
		16

Senior

Fall semester

CE 015	Engineering Assembly	0
Option elective***		6
Civil engineering electives****		6
Humanities or social science electives**		5
		17

Spring semester

CE 015	Engineering Assembly	0
CE 585	Civil Engineering Project	3
Civil engineering elective****		3
Humanities or social science electives**		8
Option elective***		3
		17

*Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from Expository Writing I.

**Humanities and social science electives are to be selected from the approved list and need not be taken in the order listed in the curriculum (two courses must be 300 level or above).

***Option electives are to be selected in consultation with the student's faculty advisor to satisfy the requirements of the option the student has chosen. One course from either the engineering materials or circuits, fields, and electronics engineering science group is required in the general option.

****Civil engineering electives are to be selected from the list approved by the department to satisfy option requirements.

Civil engineering courses

CE 015. Engineering Assembly. (0) I, II.

CE 212. Elementary Surveying Engineering. (3) I, II. Coordinates, directions, distances, and elevation. Traverses. Boundary surveys. Leveling. National rectangular coordinate systems. Property descriptions: public land subdivision and metes and bounds. Topographic surveys. Surveying, planning, and estimating. One hour lec. and six hours lab a week. Pr.: MATH 150.

CE 231. Statics A. (3) I, II. Composition and resolution of forces; equilibrium of force systems; application of the principles of statics to problems, including force analyses of simple structures. Centroids; moments of inertia. Three hours rec. a week. Pr.: PHYS 113 and MATH 220 or conc.: MATH 211.

CE 322. Soil and Foundation Construction. (3) II. The origin, distribution, and predictable variation of soil; soil testing and mechanics as applied to practical problems; soil investigations; foundation types, application and construction; ground water, drainage, and dewatering; earth moving including stable cuts in embankments. Not open to engineering students. Two hours rec. and three hours lab a week. Pr. or conc.: GEOL 100.

CE 331. Strength of Materials A. (3) I, II. Behavior of materials subjected to tension, compression, shear, and bending; design of beams and columns. Three hours rec. a week. Pr.: CE 231.

CE 332. Strength of Materials A Laboratory. (1) I, II. Tests to determine the physical properties of various structural materials. Analysis and interpretation of test data. Three hours lab a week. Pr.: ENGL 120 or 100 with grade of A or B, and one course in graphics. Pr. or conc.: CE 331.

CE 333. Statics. (3) I, II, S. Composition and resolution of forces; equilibrium of force systems; application of general laws of statics to engineering problems, including use of vector algebra, friction and force analyses of simple structures, cables, and machine elements; center of gravity; moments of inertia. Three hours rec. a week. Pr.: MATH 221 and PHYS 213.

CE 380. Computer Applications in Civil Engineering. (1) I,II. Application of computers to problems in civil engineering, including programming. Use of software packages for report preparation, graphics generation, spreadsheet analysis, and data management. One hour rec. and two hours lab a week. Pr.: MATH 221 and NE 385. Conc.: STAT 490.

CE 411. Route Location and Design. (4) I, II. Transportation systems; highway location and the geometric design of streets and highways considering the driver-vehicle-roadway system characteristics; curves and earthwork; surveying pertaining to the alignment of highways and railways. Two hours rec. and six hours lab a week. Pr.: CE 212, MATH 221, and PHYS 213.

CE 499. Honors Research in Civil Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering honors program. A report is presented orally and in writing during the last semester.

CE 522. Soil Mechanics I. (3) I, II. Identification, classification, and engineering properties of soils; theory and application of consolidation, compressibility, and strength of soils; ground water retention and movement; slope stability and lateral earth pressures; stress distribution in soil. Two hours rec. and three hours lab a week. Pr.: CE 533.

CE 528. Foundation Engineering. (3) I. Prediction of soil variation; soil investigations; stress distribution and bearing capacity; dewatering analysis and procedures; retaining structures and lateral earth pressures; shallow foundations, pile foundations; underpinning and grouting. Two hours rec. and three hours lab a week. Pr.: CE 522. Pr. or conc.: CE 544.

CE 530. Statics and Dynamics. (4) I, II. A shortened combined course in (1) statics, including a study of force systems, free-body diagrams, and problems in equilibrium, friction, centroids, and moments of inertia; and (2) dynamics, including a study of the kinematics and kinetics of particles and rigid bodies using the methods of force-mass acceleration, work-energy, and impulse-momentum. Four hours rec. a week. Pr.: MATH 222 and PHYS 213.

CE 533. Mechanics of Materials. (3) I, II. Elementary theories of stress and strain, behavior of materials, and applications of these theories and their generalizations to the study of stress distribution, deformation, and instability in the simple structural forms that occur most frequently in engineering practice. Three hours rec. a week. Pr.: CE 333 or 530. Pr. or conc.: Math 222.

CE 534. Mechanics of Materials Laboratory. (1) I, II. Determination of selected mechanical properties of several engineering materials, including iron-carbon alloys, aluminum alloys, concrete, wood, and plastics; relationship between structure and mechanical properties of these materials; elementary problems in experimental stress analysis and structural behavior; test procedures, instrumentation, and interpretation of results. One hour lab instruction and two hours lab a week. Pr. or conc.: CE 533.

CE 537. Introduction to Structural Analysis. (4) I, II. Elastic analysis of determinate and indeterminate beams, frames, and trusses; construction of shear and moment diagrams and influence lines; calculation of deflections using conjugate beam and virtual work; solution of indeterminate structures by consistent deformation, slope-deflection, moment distribution, and matrix stiffness method; with microcomputer applications. Four hours rec. a week. Pr.: CE 533. Pr. or conc.: CE 380.

CE 542. Structural Engineering in Steel. (3) II. Introduction to design of steel structures. Theoretical, experimental, and practical bases for proportioning members and their connections. Two hours rec. and three hours lab a week. Pr.: CE 537.

CE 544. Structural Engineering in Concrete. (3) I. A study of the theories of reinforced concrete and of its characteristics as a construction material; design of reinforced concrete structures. Two hours rec. and three hours lab a week. Pr.: CE 537.

CE 551. Hydrology. (2) I, II. A study of the sources of supply and movement of underground and surface waters. Two hours rec. a week. Pr.: PHYS 113 or 213. Cross-listed with BAE 551.

CE 552. Hydraulic Engineering. (3) II. Applications of the principles of fluid mechanics to control and use of water; reservoir, dam, and spillway design; enclosed conduit and open-channel design; hydraulic machinery and hydro-power development; principles of fluid measurement; laboratory-flow and velocity metering, hydraulic models, pipe losses, open-channel flow. Two hours rec. and three hours lab a week. Pr.: ME 571. Pr. or conc.: CE 551.

CE 553. Hydrologic Methods Laboratory. (1) I, II. Application of hydrologic methods and computational techniques in design; data analysis and presentation; rainfall and flood frequency analysis; rainfall-runoff; hydrograph generation and flood routing; design of small reservoirs. Three hours lab a week. Pr.: CE 380 or BAE 200. Pr. or conc.: CE 551 or BAE 551.

CE 563. Environmental Engineering Fundamentals. (3) I, II. Basic physical, chemical, and biological concepts and their applications to the protection of the environment with emphasis on techniques used in water and wastewater treatment. Two hours rec. and three hours lab a week. Pr.: CHM 230 and MATH 222.

CE 565. Water and Wastewater Engineering. (3) II. Design of water supply and waste treatment control facilities, including collection, storage, and treatment systems. Two hours rec. and three hours lab a week. Pr.: CE 563, PHYS 214, and ME 571. Pr. or conc.: CE 552.

CE 570. Transportation Planning. (3) Intersession. Fundamentals of transportation planning. Historical development and current status of techniques used in travel demand forecasting; trip generation, trip distribution, mode choice, and traffic assignment. Current microcomputer models and applications. Pr.: CE 380 or equivalent and junior standing.

CE 572. Highway Engineering and Management. (3) I. Applications of the principles of highway planning, design, and capacity analysis techniques to analyze, design, and maintain street and highway systems. Assessment of the impact of activity center development or redevelopment on the surrounding surface transportation system. Two hours rec. and three hours lab a week. Pr.: CE 411 and 522.

CE 580. AI Applications in Civil Engineering. (2) Intersession. A review of the available techniques in artificial intelligence and a survey of applications in the different areas of civil engineering (structures, transportation/materials, geotechnical, hydraulics/water resources, and environmental engineering). Knowledge representation, inference mechanisms, system development and evaluation, object-oriented programming. Use of expert system shells, neural networks, and fuzzy logic. Hands-on applications on microcomputers in the MS-Windows environment. Three hours recitation for 10 days. Afternoon lab hours additional in computer laboratory. Pr.: CE 380.

CE 585. Civil Engineering Project. (3) I, II. A comprehensive civil engineering project to be taken in the last semester of the B.S. program. Requires integration of skills acquired in civil engineering elective courses. Students must prepare and present written and oral design reports. One hour rec. and two three-hour labs a week. Pr.: ENGL 415 and 6 hours of CE electives. Pr. or conc.: Six additional credit hours of CE electives.

Undergraduate and graduate credit

CE 641. Civil Engineering Materials I. (3) I. Properties and behavior of structural metals, timber, portland cement concrete, and bituminous concrete; standard specifications and methods of test; inspection and control; long-term protection and durability. Two hours rec. and three hours lab a week. Pr.: CE 534 and ENGL 415. Pr. or conc.: either CE 528 or 542 or 544.

CE 680. Economics of Design and Construction. (3) II. Selection of alternative engineering design and construction solutions through study of unit cost determination, cost estimating, and financing procedures. Introduction to construction scheduling. Three hours rec. a week. Pr.: Senior standing in engineering or graduate standing for nonengineering majors.

CE 686. Regional Planning Engineering. (3) I. Engineering problems involved in regional planning; the design and location of streets and highways, water supply and sanitary facilities, drainage and public utilities; rights-of-way and easement. Two hours rec. and three hours lab a week. Pr.: Senior standing in engineering or graduate standing in regional and community planning.

CE 718. Engineering Photo Interpretation. (3) II. Photo interpretation techniques, types of aerial photographic film and their uses; application in land use studies, land surveying, site selection, rainfall runoff and stream flow, location of construction materials, and in the determination of soil properties; other applications. Two hours rec. and three hours lab a week. Pr.: Senior standing and consent of instructor.

CE 723. Designing with Geosynthetics. (3) II, in alternate years. History of geosynthetics; overview of geosynthetic functions, applications, and properties; relationship between testing and applications. Designing with geotextiles, geogrids, geonets, geomembranes, geosynthetic clay liners, and geocomposites. Three hours rec. a week. Pr.: CE 522.

CE 725. Seepage in Permeable Materials. (3) I. In alternate years. Analysis of seepage; groundwater movement in slopes, embankments, dams, and earth-supporting structures; construction of flow nets; dewatering systems; filter and drain design. Three hours rec. a week. Pr.: CE 522 and CE 552.

CE 728. Advanced Geotechnical Design. (3) II. Advanced studies of soil investigations; design of retaining structures and reinforced earth walls, sheet piles, anchored bulkheads, underground conduits and tunnels; analysis and repair of failed structures. Two hours rec. and three hours lab a week. Pr.: CE 528.

CE 732. Advanced Structural Analysis I. (3) I. Classical methods of analysis of statically indeterminate structures; deflections and influence lines for indeterminate structures; analysis of space frames and trusses. Three hours rec. a week. Pr.: CE 537.

CE 741. Civil Engineering Materials II. (3) II. Advanced study of civil engineering materials including concrete, steel, and bituminous concrete. Two hours rec. and three hours lab a week. Pr.: CE 641 and CHE 350.

CE 742. Advanced Steel Design. (3) II. Plastic design of steel structures; stability problems in plastic design; design of complex steel structures. Three hours rec. a week. Pr.: CE 542.

CE 743. Advanced Reinforced Concrete Theory. (3) II. Advanced theories and methods of design and analysis of reinforced concrete structures. Three hours rec. a week. Pr.: CE 544.

CE 751. Hydraulics of Open Channels. (3) I. Properties of open-channel flow; types of open channels; conservation of mass, momentum, and energy; critical, uniform, and gradually varied flow; design of erodible channels; rapidly varied flow. Three hours rec. a week. Pr.: CE 552.

CE 752. Advanced Hydrology. (3) I. Review of basic principles; point and regional rainfall and flood frequency analyses; hydrologic and hydraulic flood routing; drainage and flood control facilities design; hydrologic modeling and simulation; flood plain analysis and planning. Three hours rec. a week. Pr.: CE 551.

CE 762. Water Treatment Processes. (3) I. Physical and chemical process principles and their application to water treatment plant design. Three hours rec. a week. Pr.: CE 565.

CE 766. Wastewater Engineering: Biological Processes. (3) II. Biological process principles and their application to the design of wastewater treatment plants. Three hours rec. a week. Pr.: CE 565.

CE 771. Urban Transportation Analysis. (3) II. Origin-destination surveys, land-use inventories, parking and transit studies; arterial street standards and operating characteristics, coordination of city planning. Two hours rec. and three hours lab a week. Pr.: CE 572 or consent of instructor.

CE 774. Pavement Design. (3) I. On sufficient demand. Methods of evaluating the load-carrying capacity of soil subgrade, subbase, and base courses; critical analysis of the methods of design for flexible and rigid pavements; methods of increasing the load-carrying capacity of highway and airport pavements. Two hours rec. and three hours lab a week. Pr.: CE 522.

CE 775. Traffic Engineering I. (3) II. Traffic operations of roads, streets, and highways; traffic engineering studies; use of signs, signals, and pavement markings as traffic control devices; highway and intersection capacity, design, and operation of traffic signals; current microcomputer models and applications. Two hours rec. and three hours lab a week. Pr.: CE 572.

CE 776. Pavement Performance and Management Systems. (3) I, in alternate years. Pavement management systems including pavement condition and structural evaluation, analysis, and optimization. Economic analysis and rehabilitation planning including computer applications. Three hours rec. a week. Pr.: CE 572.

CE 790. Problems in Civil Engineering. (Var.) I, II, S. Pr.: Approval of instructor.

Computing and Information Sciences

Virgil E. Wallentine, Head

Professors Gustafson,* Hankley,* Schmidt,* Unger,* and Wallentine;* Associate Professors Bleyberg,* Howell,* Mizuno,* Singh,* Stoughton;* Assistant Professor Andresen, Dwyer,* Huth,* Miller, and Neilsen;* Instructor Campbell; Emeriti:

Professor van Swaay, Associate Professor Calhoun.

http://www.cis.ksu.edu

The creation and use of the best possible hardware and software is, broadly speaking, the field of computer science.

Two curricula, computer science and information systems, are offered by the Department of Computing and Information Sciences. Many other fields require a minor emphasis in computer science, and students working toward a dual degree (one in computer science and one in some other field) are common.

The department maintains state-of-the-art computing and networking laboratories. Large-computer facilities are provided by Computing and Network Services. Some students choose to own or share microcomputers because of the convenience and learning efficiency of personal interactive computing.

Students must earn a grade of C or better for each course they wish to use to satisfy requirements for their major. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Computer science curriculum

The B.S. in computer science is accredited by the Computer Science Accreditation Commission of the Computing Sciences Accreditation Board, a specialized accrediting body recognized by the Council on Post-secondary Accreditation and the U.S. Department of Education.

The computer science curriculum emphasizes a broad foundation of computer organization, programming languages, software engineering, distributed computing systems, data systems, algorithms, data structures, programming systems and environments, and mathematics, together with electives that focus on some aspect or application of computers. The computer science curriculum is recommended for students planning graduate studies in computing.

Technical electives consist of a set of computer science courses that permit students to concentrate on an area of technical expertise. The most common technical areas are: software engineering, which involves management and development of large software systems; operating systems, which consists of the supervisory software that controls the operation of a computer; theoretical computer science; computer systems architecture, which involves design of centralized and distributed computer systems; programming languages and their compilers; data systems; and knowledge engineering (artificial intelligence).

A person seeking a bachelor of science degree in computer science must fulfill the general requirements of the College of Arts and Sciences and the following:

ENGL 516	Written Communication for the Sciences	3
MATH 220	Analytic Geometry and Calculus I	4
MATH 221	Analytic Geometry and Calculus II	4
MATH 510	Discrete Mathematics	3
MATH 551	Applied Matrix Theory	3
MATH 655	Elementary Numerical Analysis	3
	or	
CIS 580	Numerical Computing	3
STAT 410	Probabilistic Systems Modeling	3
EECE 241	Introduction to Computer Engineering	3
CIS 015	Undergraduate Seminar	0
CIS 200	Fundamentals of Computer Programming	4
CIS 300	Algorithms and Data Structures	3
CIS 301	Logical Foundations of Computing	3
CIS 350	Computer Architecture and Organization	3
CIS/ PHILO 492	Computers and Society	3
CIS 500	Analysis of Algorithms and Data Structures	3
CIS 520	Operating Systems I	3
CIS 540	Software Engineering Project I	3
CIS 541	Software Engineering Project II	3
CIS 560	Introduction to Data Management Systems	3
CIS 570	Theoretical Foundations of Computing	3
CIS 605	Programming Languages	3
Technical electives (with advisor's approval)		9

Natural science electives for the CS degree must meet the Computing Sciences Accreditation guidelines.

Required courses may not be taken under the A/Pass/F option.

Suggested course schedule for computer science

Freshman year

Fall semester

CIS 015	Undergraduate Seminar	0
CIS 200	Fundamentals of Computer Programming	4
MATH 220	Analytic Geometry and Calculus I	4
ENGL 100	Expository Writing	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
		13–14

Spring semester

CIS 300	Algorithms and Data Structures	3
CIS 301	Logical Foundations of Programming	3
MATH 221	Analytic Geometry and Calculus II	4
Humanities elective (first of four)		3
Social science elective (first of four)		3
		16

Sophomore year

Fall semester

CIS 500	Analysis of Algorithms and Data Structures	3
EECE 241	Introduction to Computer Engineering	3
MATH 551	Applied Matrix Theory	3
ENGL 200	Expository Writing II	3
Natural science elective with laboratory (first of four)		4
		16

Spring semester

CIS 350	Computer Architecture and Organization	3
CIS 605	Programming Languages	3
MATH 510	Discrete Mathematics	3
Natural science elective with laboratory (second of four)		4
Social science elective (second of four)		3
		16

Junior year

Fall semester

CIS 520	Operating Systems I	3
CIS 570	Theoretical Foundations of Computing	3
MATH 655	Elementary Numerical Analysis	3
	or	
CIS 580	Numerical Computing	3
Humanities elective (second of four)		3
Natural science elective with laboratory (third of four)		3
		15

Spring semester

CIS 560	Introduction to Data Management	3
STAT 410	Probabilistic Systems Modeling	3
Technical elective (first of three)		3
Social science elective (third of four)		3
Free elective		3
		15

Senior year

Fall semester

CIS 540	Software Engineering Project I	3
ENGL 516	Written Communications for the Sciences	3
Technical elective (second of three)		3
Humanities elective (third of four)		3
Natural science elective (fourth of four)		3
		15

Spring semester

CIS 541	Software Engineering Project II	3
CIS/ PHILO 492	Computers and Society	3
Technical elective (third of three)		3
Humanities elective (fourth of four)		3
Social science elective (fourth of four		3
		15

Information systems curriculum

The information systems curriculum emphasizes the use of computers to solve problems arising in the operations of business and commerce. The curriculum closely follows programs designed by the Association for Computing Machinery and the Data Processing Management Association.

Five specializations are available, each designed to develop additional skills supportive of needs of the industry. These specializations are database manager (designs, uses, maintains, and manages database systems), management information systems specialist (defines organization requirements, acts as a management-technical communication channel, evaluates information systems, manages analyst/programmers), application programmer (designs detail logic, codes, verifies, documents programs and systems), and communications analyst (designs and implements distributed information systems, specifies and designs interface to the communication system.)

A person seeking a bachelor of science degree in information systems must fulfill the general requirements of the College of Arts and Sciences and the following:

ENGL 516	Written Communication for the Sciences	3
MATH 205	General Calculus and Linear Algebra	3
MATH 312	Finite Applications of Mathematics	3
STAT 320	Elements of Statistics	3
EECE 241	Introduction to Computer Engineering	3
CIS 015	Undergraduate Seminar	0
CIS 200	Fundamentals of Computer Programming	4
CIS 300	Algorithms and Data Structures	3
CIS 301	Logical Foundations of Programming	3

CIS 350	Computer Architecture and Organization	3
CIS 362	Introduction to Business Programming	3
CIS 462	Information Systems in Organizations	3
CIS 500	Analysis of Algorithms and Data Structures	3
CIS 520	Operating Systems I	3
CIS 525	Telecommunications and Data Communications Systems	3
CIS 540	Software Engineering Project I	3
CIS 541	Software Engineering Project II	3
CIS 560	Introduction to Data Management Systems	3
CIS 605	Programming Languages	3
Technical electives (with advisor's approval):		12

Required courses may not be taken under the A/Pass/F option.

Suggested course schedule for information systems

Freshman year

Fall semester

CIS 015	Undergraduate Seminar	0
CIS 200	Fundamentals of Computer Programming	4
MATH 205	General Calculus and Linear Algebra	3
ENGL 100	Expository Writing I	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
Humanities elective (first of four)		3
		15–16

Spring semester

CIS 301	Logical Foundations of Programming	3
CIS 300	Algorithms and Data Structures	3
MATH 312	Finite Applications of Mathematics	3
Humanities elective (second of four)		3
Social science elective (first of four)		3
		15

Sophomore year

Fall semester

CIS 500	Analysis of Algorithms and Data Structures	3
EECE 241	Introduction to Computer Engineering	3
ENGL 200	Expository Writing II	3
Natural science elective with laboratory (first of four)		4
Social science elective (second of four)		3
		16

Spring semester

CIS 350	Computer Architecture and Organization	3
CIS 605	Programming Languages	3
STAT 320	Elements of Statistics	3
Technical elective		3
Natural science elective with laboratory(second of four		4
		16

Junior year

Fall semester

CIS 362	Introduction to Business Programming	3
CIS 520	Operating Systems I	3
Technical elective		3
Natural science elective (third of four)		3
Free elective		3
		15

Spring semester

CIS 462	Information Systems in Organizations	3
CIS 560	Introduction to Data Management Systems	3
Technical elective		3
Humanities elective (third of four)		3
Free elective		3
		15

Senior year

Fall semester

CIS 525	Telecommunications and Data Communications Systems	3
CIS 540	Software Engineering Project I	3
Technical elective		3
Natural science elective (fourth of four)		3
Social science elective (third of four)		3
		15

Spring semester

CIS 541	Software Engineering Project II	3
ENGL 516	Written Communications for the Sciences	3
Humanities elective (fourth of four)		3
Social science elective (fourth of four)		3
Free elective		3
		15

A free elective is any 100- or higher-level course, excluding courses listed as a prerequisite to a required course.

Minor in computer science

CIS 200, CIS 300, CIS 500 plus any two additional 500- or 600-level courses in CIS for a total of 16 hours.

Computer science courses

Undergraduate credit

CIS 015. Undergraduate Seminar. (0) I, II. Presentation of professional problems and practices by students, faculty, and industry professionals associated with computing and information sciences. Required of all undergraduate students new to the department. One hour lecture a month.

CIS 101. Introduction to Information Technology. (1) I, II, S. Introduction to microcomputer hardware components and operating system software; Windows as a graphical user interface and disk/file management tool; Internet, including World Wide Web and home pages, e-mail, telnet, and ftp. One hour lecture, tow hours scheduled laboratory, and two hours unscheduled open laboratory each week. Course meets in one contiguous block of four weeks.

CIS 102. Introduction to Microcomputer Spreadsheet Applications. (1) I, II, S. Designing, building, and modifying spreadsheets. Addressing techniques and formatting. Use of formulas and functions. Spreadsheets as management and decision tools. Charting of data. One hour lecture, two hours scheduled laboratory, and two hours unscheduled open laboratory each week. Course meets in one contiguous block of four weeks. Pr.: CIS 101.

CIS 103. Introduction to Microcomputer Database Applications. (1) I. II, S. Design, create, modify and maintain relational databases. Create relationships. Add and modify data. Search and query database. Design and create screen forms and reports. One hour lecture, two hours scheduled laboratory, and two hours unscheduled open lab. each week. Course meets in one contiguous block of four weeks. Pr.: CIS 101.

CIS 104. Introduction to Microcomputer Word Processing Applications. (1) I. II, S. Basic features of word processing. Create and edit a document. View, format, and customize document. Revise, update and rearrange text. Add graphics. Support features. Merge documents. One hour lec., two hours scheduled lab, and two hours scheduled open lab each week. Course meets in one contiguous block of four weeks. Pr.: CIS 101.

CIS 112. Advanced Personal Computing. (3) Advanced features of application software for personal computers, including batch files, configuration and maintenance of hardware and software, macros for application software, and sharing of data and programs. Individualized problems. Two hours lec. and four hours lab a week. Pr.: B or better in CIS 101 or permission of instructor.

CIS 200. Fundamentals of Computer Programming. (4) I, II, S. Abstraction and problem solving, concept of algorithm and algorithm efficiency, control structures, procedures, arrays and array processing; introduction to a procedural language, and use of that language in selected applications. Three hours lec., two hours lab each week. Pr.: MATH 100.

CIS 208. C Language Laboratory. (1) I, II. Fundamentals of programming in C; applications. Three hours lab a week. Pr.: CIS 200.

CIS 209. C/C++ Programming for Engineers. (3) I, II, S. Application of computers to engineering problems. Abstraction and problem solving; algorithms; control structures; input/output; functions; arrays and array processing. Two hours lec., two hours lab each week. Pr .: MATH 220.

CIS 300. Algorithms and Data Structures. (3) I, II, S. Structured and modular design and implementation; arrays, records, sets, pointers, files, strings; defined types, stacks, queues; searching, hashing, sorting; recursion; procedure specifications, exceptions, testing, debugging. Pr.: CIS 200.

CIS 301. Logical Foundations of Programming. (3) II. Foundations of logic; definitions and proofs by induction; program specifics as logical formulae; invariants; programming as theorem proving. Pr.: CIS 200.

CIS 306. Operating Systems Laboratory. (3) Advanced programming laboratory for experience in O/S 360/370, job control language, utilities, and access methods. Pr.: CIS 350 and 407.

CIS 350. Computer Architecture and Organization. (3) I, II. Introduction to computer architecture as the interface between hardware and software. Register-transfer CPU, memory bus, and input/output structures. Assembler language as the programmer's interface to the bare machine; relationships between high-level language constructs and assembler/machine languages. Pr.: EECE 241 and CIS 300.

CIS 362. Introduction to Business Programming. (3) I. An introduction to basic business programming techniques including file manipulation operations and sorting. The COBOL language will be used as an implementation tool. Pr.: CIS 200.

CIS 397. Honors Seminar in Computer Science. (1–3).

CIS 407. Assembler Language Programming. (3) Programming in assembler language under mainframe environment such as IBM, CMS, and VM. Introduction to system services such as file operations and channel programming. Pr.: EECE 241 and CIS 350.

◆**CIS 411. Global Information System.** (3) Structure of large computer networks; information available via networks; data bases, news groups, list servers, and hyper media. Handling of text, numeric, sound, and visual information. Application such as catalogs, distributed groupwork, and remote teaching. Issues of ethics, economics, and utility in use of networks; future technologies. Pr .: CIS 101 (understanding of use of personal computers and software.)

CIS 462. Information Systems in Organizations. (3) II. Role of information systems in organizations, representation of systems structures, decision processes, system evaluation, information system applications including file structures, and using a high level language in a system study. Pr: CIS 362.

CIS 490. Special Topics in Computer Science. (2–4) Current topics in computer science. Pr.: Prerequisite varies with the announced topic.

CIS 492. Computers and Society. (1–3) A study of the impact of computers and associated technologies on society, including such topics as ethics of computer use, computer fraud, protection of privacy; legal, moral, and public policy-making responsibility of computer professionals. Pr.: Junior standing and conc. enrollment in PHILO 492; CIS 520.

CIS 499. Honors Research/Thesis. (2–4) Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering honors program and to seniors in the College of Arts and Sciences honors program. A report/thesis is presented orally and in writing during the last semester.

Undergraduate and graduate credit in minor field

CIS 500. Analysis of Algorithms and Data Structure. (3) I, II. Analysis of data structures and computer algorithms for trees, lists, graphs, sets. Measures of performance and complexity of algorithms and structures. Pr.: CIS 300.

CIS 520. Operating Systems I. (3) I. Basic operating systems concepts and services: interrupt processing, process, concurrency, deadlock, resource scheduling and system structure; resource management: real and virtual storage, input/output systems, disk scheduling and file systems; design and construction of concurrent programs. Pr.: CIS 350 or EECE 631; and CIS 500.

CIS 521. Real-Time Programming Laboratory. (3) I. Project-oriented introduction to asynchronous processes and related system software; device drivers, event-driven operations, hierarchical and time-sliced process scheduling, spooling operations, interjob and intermachine communications. Project will be built on a single-use environment. Pr.: CIS 520.

CIS 525. Telecommunications and Data Communications Systems. (3) Basic concepts including OSI 7 layer model, data transmission methods, medium access, link control, connections management; network applications including electronic mail, file transfer, distributed computing, window systems; network management including OSI and Internet management frameworks. Pr.: CIS 300.

CIS 540. Software Engineering Project I. (3) I. Current practices of software development, requirements, design, prototyping, measures, and evaluation. Specification, design, and prototyping of a software system. Pr.: CIS 500.

CIS 541. Software Engineering Project II. (3) II. Final implementation, integration, and testing of a software system. Introduction to configuration management, project management, and software maintenance. Pr.: CIS 540 (which must be taken in the preceding semester).

CIS 560. Database System Concepts. (3) I. II. Concepts, approaches, and techniques in database management. Representation of information as data, data storage techniques, foundations of logical data models, data retrieval, database design, transaction management, integrity and security. Pr.: CIS 500; CIS 301 or MATH 510.

CIS 570. Theoretical Foundations of Computing. (3) I. specifications and correctness of algorithms, formal languages and automata, introduction to computability, computational complexity of algorithms. Pr.: MATH 510, CIS 300, and CIS 301.

CIS 580. Numerical Computing. (3) I. Introduction to numerical algorithms fundamental to scientific computer work, including elementary discussion of error, roots of equations, interpolation, systems of equations, quadrature, and introduction to methods for solution of ordinary differential equations. Pr.: CIS 300 and MATH 221 and 551.

CIS 591. Computer Science Applications. (3) I, II, S. Programming, program libraries, and design of algorithms. for students with minimal background in computer science. Not for credit by CIS majors. Pr.: Graduate standing in student's own area and knowledge of at least one procedural programming language.

Undergraduate and graduate credit

CIS 600. Microcomputer Software. (3) I. Contemporary software packages for microcomputers, including graphics, word processing, spreadsheets, desktop publishing. Events, resources, and the graphical user interface. Student programming project. Pr.: CIS 300.

CIS 604. Set Theory and Logic for CS. (3) Informal and axiomatic set theory, propositional and predicate logic, proof techniques. Pr.: Graduate standing.

CIS 605. Programming Languages. (3) History, processors, programming environments; types, scopes and extent, abstraction mechanisms, exceptions and concurrency; functional and object-oriented languages; formal syntax and semantics; structure of compilers for block-structured languages. Pr.: CIS 300.

CIS 606. Translator Design I. (3) Compilers and interpreters, including description of languages, finite state scanners, LL (1) parsing, symbol tables, syntax directed semantics, simple code generation. Constructing a simple PASCAL compiler. Pr.: CIS 500, 605.

CIS 620. Operating System Practices. (3) Structure and functions of modern operating systems. Emphasis on reading and modifying the source code of a working operating system. This includes memory management, input/output, process management, file systems, and network interconnection software construction. Pr.: CIS 520.

CIS 625. Parallel Programming. (3) Basic concepts of concurrent and distributed programming; parallel computing architectures; real-time programming; parallel simulation; fault-tolerant programming; partitioning, mapping, and granularity of parallel programming such as communication systems; grid, N-body stimulation, and matrix problems; and embedded systems control. Pr.: Pr.: CIS 500 and 520.

CIS 630. AI Programming Techniques. (3) Techniques of functional, logic and object-oriented programming used in artificial intelligence. Programming projects in Scheme/Lisp, Prolog and CLOS. Pr.: CIS 500.

CIS 635. Introduction to Computer-Based Knowledge Systems. (3) I. Introduction to the applications of artificial intelligence concepts to solving knowledge-dependent tasks. Review of knowledge-representation ideas. Survey of expert system design. Introduction to existing knowledge-based tools available on personal computers. Development of an intelligent system. Pr.: CIS 300.

CIS 636. Introduction to Computer Graphics. (3) I, II. Devices and software for graphics display and user interaction, development of software for direct graphic manipulation applications. Pr.: CIS 300.

CIS 638. Multimedia Systems. (3) II. Introduction to computer graphics devices, user interaction; history and scope; multimedia structure, encoding methods and standards, mark-up and scripting languages, software tools, and applications; readings in current literature; class presentation; multimedia project. Pr.: CIS 300, senior standing.

CIS 640. Software Testing Techniques. (3) II, in alternate years. Survey of software testing methodologies; evaluation of software testing strategies; experience in a variety of software testing practices. Pr.: CIS 540.

CIS 644. Object Oriented Design and Development. (3) Object models, concepts of classes and objects, dynamic models, comparison of design methods, relationship to object-oriented languages, tools for design and program construction, design and prototype project. Three hours rec. a week. Pr.: CIS 300.

CIS 645. Software Development Environments. (3) On sufficient demand. Survey of current development environment. Pr.: CIS 500.

CIS 690. Implementation Projects. (3) I, II, S. The department will suggest various design or implementation projects for individuals or groups in areas such as translators, interpreters, microprogramming, minicomputer operating systems, graphics, numerical software, etc. Pr.: Junior standing.

CIS 697. Seminar in Computer Science. (1–3) Pr.: Junior standing.

CIS 705. Programming Language Design. (3) Fundamental design principles: abstraction, parameterization, qualification. Lamda-calculus as a metalanguage for design and analysis. The role of data typing, predicate calculus-base typing. Intuitionistic Type Theory. Pr.: CIS 605.

CIS 707. Fundamentals of Programming Semantics. (3) Fundamentals of algebraic specification techniques for specifications, initial algebra semantics, the equational calculus, term rewriting, corrections and extension of specifications. Pr.: CIS 500, 605.

CIS 710. Computer Simulation Experiments. (3) Principles of digital computer simulations; discrete and continuous simulation method, statistics of simulations; implementations. Pr.: CIS 300.

CIS 720. Advanced Operating Systems. (3) Process synchronization and communication, distributed programming primitives, transactions and concurrency control, distributed scheduling, distributed storage, deadlock, security. Pr.: CIS 520.

CIS 721. Real Time Systems. (3) The design of hard real-time embedded systems, including language and operating system support, scheduling, schedulability analysis, fault-tolerance, and design tools. Pr.: CIS 520.

CIS 725. Advanced Computer Networks. (3) Network algorithms; routing and congestion control; protocol engineering; protocol decomposition, specification and verification, synthesis; protocols for high speed networks; parallel implementations, light-weight protocols. Pr.: CIS 520 and 525.

CIS 730. Principles of Artificial Intelligence. (3) Introduction to the fundamental concepts and techniques of AI: problem solving, search and planning, knowledge representation and qualitative reasoning, expert systems, natural language processing and cognitive modeling, computer vision, and machine learning. Pr.: CIS 630.

CIS 736. Computer Graphics. (3) Topics in computer representation and display of images and graphic interaction. Pr.: CIS 636 or EECE 636.

CIS 740. Software Engineering. (3) Software life cycle, requirements, specifications, design, validation, measures, and maintenance. Pr.: CIS 540.

CIS 746. Software Measurement. (3) Measurement theory; development, validation and use of software measures; software measures in the software life cycle, including cost estimation, design measures, software complexity and software reliability. Pr.: CIS 540.

CIS 748. Software Management. (3) Topics related to the management of software, including organization, project planning, process models, life cycle models. TQM, software quality assurance, cost estimation, configuration management. Three hours rec. a week. Pr.: CIS 740.

CIS 750. Advanced Computer Architecture Experiments. (3) Characteristics of various computers including those with execution support of multiprocessing, multiprogramming, microprogrammable, high-level language, stack processing, and communication architectures. Two hours lec. and three hours lab a week. Pr.: CIS 350 or 407.

CIS 761. Data Base Management Systems. (3) Data models and languages, hierarchical, network, relational systems; implementation and operational requirements: programming projects using data base management systems. Pr.: CIS 560, 604.

CIS 762. Office Automation. (3) Characteristics of information work; modeling systems for characterizing aspects of office environment; form-based systems; office automation and description languages; ergonomics; local area networks and tools used in the automation of offices. Pr.: CIS 525, 560.

CIS 764. Database Design. (3) Conceptual, logical, physical, and user interface design for database management systems. Three hours rec. a week. Pr.: CIS 500.

CIS 770. Formal Language Theory. (3) Regular languages, finite automata, context-free languages, pushdown automata, context-sensitive languages, linear bounded automata, recursively enumerable languages, Turing machines. Pr.: CIS 570.

CIS 771. Software Specification. (3) Formal logic for specification of software components; algebraic vs. model-based specifications; common abstract types; verification of properties of specifications; introduction to specification of concurrent systems. Pr.: CIS 604.

CIS 775. Analysis of Algorithms. (3) Study and application of techniques and procedures used in the analysis of algorithms including the worst and average cases of both time and space. Study of the P and NP classes. Pr.: CIS 500, 604 and MATH 220.

CIS 798. Topics in Computer Science. (Var.) I, II, S. Pr.: Prerequisite varies with the announced topic.

Electrical and Computer Engineering

David L. Soldan, Head

Professors Carpenter,* DeVault, Devore,* Dillman,* R. Dyer,* S. Dyer,* Fowler,* Gallagher,* Hummels,* Lenhert,* Morcos,* Pahwa,* Rys,* and Soldan;* Associate

Professors Chandra,* Day,* Fox,* and Hudson;* Assistant Professors Gruenbacher, Kuhn,* Miller,* and Starrett;* Emeriti: Professors Cottom, Dollar, Haft, Johnson, Kirmser, Koepsel, Lucas, Rathbone, and Ward; Instructor: Wakabayashi.

http://www.eece.ksu.edu

Electrical and computer engineers are involved in the design of electrically oriented systems for a range of applications in modern society. These systems or circuits range from miniature microprocessors through energy conversion systems to giant communication networks and supercomputers. Electrical or computer engineers are involved in every phase of the transmission, conversion, and processing of energy and information for useful purposes both in industry and in our homes.

Opportunities exist for baccalaureate degree holders to continue education at advanced degree levels or to enter such fields as medicine, law, or management.

The electrical and computer engineering curricula provide course work in the basic sciences, mathematics, and communications skills. They also provide an understanding of the ethical, social, safety, and economic factors required for professional engineering practice. A sequence of courses in the humanities and social sciences provides depth and breadth to the student's education.

The electrical engineering curriculum establishes a theoretical basis in circuits, electronics, electromagnetics, energy conversion, and controls. It develops advanced problem solving skills in the student's area of specialization and includes a strong laboratory experience stressing system design and implementation.

The computer engineering curriculum establishes a theoretical basis for computer components in circuits, electronics, electromagnetics, digital systems, and microprocessors and for software in programming languages, algorithms, data structures, and operating systems. It develops advanced problem solving skills in an environment where hardware and software tradeoffs are necessary. A strong laboratory experience stressing digital and microprocessor system design and implementation is included.

Through the four years, students are individually advised and counseled by the faculty. At various times during the year, engineers from industry are invited to speak to students on topics of current interest to the profession.

Curriculum in electrical engineering (EE)

Bachelor of science in electrical engineering
135 hours required for graduation
Accredited by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology

Freshman

Fall semester

ENGL 100	Expository Writing I*	3
SPCH 105	Public Speaking IA	2
ECON 110	Principles of Macroeconomics	3
CHM 210	Chemistry I	4
MATH 220	Analytic Geometry and Calculus I	4
DEN 015	New Student Orientation	0
		16

Spring semester

CIS 209	C Programming for Engineers	3
MATH 221	Analytic Geometry and Calculus II	4
CHM 230	Chemistry II	4
Humanities or social science elective		3
		14

Sophomore

Fall semester

EECE 241	Introduction to Computer Engineering	3
PHYS 213	Engineering Physics I	5
MATH 222	Analytic Geometry and Calculus III	4
CHE 350	Engineering Materials	2
Humanities or social science elective		3
		17

Spring semester

EECE 510	Circuit Theory I	3
PHYS 214	Engineering Physics II	5
MATH 240	Elementary Differential Equations	4
DEN 275	Introduction to Personal and Professional Development	1
STAT 510	Introductory Probability and Statistics I	3
		16

Junior

Fall semester

EECE 501	Electrical Engineering Laboratory I	2
EECE 511	Circuit Theory II	3
EECE 525	Electronics I	3
EECE 431	Microcontrollers	3
CE 530	Statics and Dynamics	4
Humanities or social science elective		3
		18

Spring semester

EECE 502	Electrical Engineering Lab II	2
EECE 512	Linear Systems	3
EECE 526	Electronics II	3
EECE 557	Electromagnetic Theory I	4
EECE 581	Energy Conversion I	3
ENGL 415	Written Communication for Engineers*	3
		18

Senior

Fall semester

EECE 530	Control Systems Design	3
ME 513	Thermodynamics I	3
Option electives		6
Complementary electives		3
Humanities or social science elective		3
		18

Spring semester

EECE 590	Seminar	1
Option electives		3
Complementary electives		11
Humanities or social science elective		3
		18

*The prerequisite for ENGL 415 is satisfied with an A or B in ENGL 100. Otherwise students must take ENGL 200, which, if necessary, may be substituted for 3 credit hours of complementary electives.

Humanities and social science electives are to be selected from the approved list and need not be taken in the order listed in the curriculum. (Two courses must be 300 level or above.)

Nine semester hours of option electives must be selected from electrical and computer engineering courses to satisfy one of the areas of specialization chosen by the student after consultation with the student's faculty advisor.

Fourteen semester hours of complementary electives must be selected from an approved list of complementary electives upon consultation with the student's faculty advisor. The complementary electives may include a maximum of 6 semester hours from electrical and computer engineering courses (10 hours for honors students.) Any student may apply a maximum of 4 hours of basic ROTC credit toward the complementary elective requirements without being required to take more credits than non-Rotc students.

Electrical engineering options

General

In the general option a set of specializations is possible. Students are expected to select a set of interrelated courses that fulfills an engineering design experience and allows for concentration in one area. Examples of such areas are communication systems, digital systems, electronics and instrumentation, solid-state electronics, control systems and robotics, signal processing, and power systems.

Bioengineering

Students pursuing the option of bioengineering can fulfill the requirements for a B.S. in electrical engineering by following the outlined core curriculum listed for electrical engineering. Students pursuing a pre-medicine program should contact the College of Arts and Sciences dean's office for additional information. A listing of courses that support the life science component of the bioengineering option follows:

CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Lab	2
CHM 550	Organic Chemistry II	3
BIOCH 521	General Biochemistry	3
BIOL 198	Principles of Biology	4
BIOL 240	Structure and Function of the Human Body	6
BIOL 505	Comparative Anatomy of Vertebrates	4
BIOL 526	Human Physiology	3
AP 530	Anatomy and Physiology	4

The selected courses from the above list will be used as complementary electives in the electrical engineering curriculum. As a minimum, students should select a life science course and, if possible, additional electives in the chemistry area.

Computer engineering (CMPEN)

Bachelor of science in computer engineering
135 hours required for graduation
Accredited by Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology.

Freshman

Fall semester

ENGL 100	Expository Writing*	3
SPCH 105	Public Speaking IA	2
CHM 210	Chemistry I	4
MATH 220	Analytic Geometry and Calculus I	4
CIS 200	Fundamentals of Computer Programming	4
DEN 015	New Student Orientation	0
		17

Spring semester

CIS 300	Algorithms and Data Structures	3
ECON 110	Principles for Macroeconomics	3
MATH 221	Analytic Geometry and Calculus II	4
EECE 241	Introduction to Computer Engineering	3

CIS 208	C Language Laboratory	1
Humanities or social science elective		3
		17

Sophomore

Fall semester

PHYS 213	Engineering Physics I	5
MATH 222	Analytic Geometry and Calculus III	4
EECE 431	Microcontrollers	3
DEN 275	Intro. to Personal and Professional Development	1
Humanities or social science elective		3
		16

Spring semester

PHYS 214	Engineering Physics II	5
MATH 240	Elementary Differential Equations	4
MATH 510	Discrete Mathematics	3
EECE 510	Circuit Theory I	3
Humanities or social science elective		3
		18

Junior

Fall semester

CIS 500	Analysis of Algorithmic and Data Structures	3
EECE 511	Circuit Theory II	3
EECE 525	Electronics I	3
STAT 510	Introductory Probability and Statistics I	3
EECE 541	Design of Digital Systems I	3
EECE 501	Electrical Engineering Lab I	2
		17

Spring semester

EECE 512	Linear Systems	3
EECE 557	Electromagnetic Theory I	4
EECE 636	Introduction to Computer Graphics	3
EECE 649	Computer Design I	3
EECE 543	Computer System Interfacing Lab	1
Humanities or social science elective		3
		17

Senior

Fall semester

CE 530	Statics and Dynamics	4
CIS 540	Software Engineering Project I	3
ENGL 415	Written Communication for Engineers*	3
EECE 631	Microcomputer Systems Design	3
Complementary electives		3
		16

Spring semester

EECE 645	Digital Electronics	3
EECE 590	Seminar	1
EECE 643	Computer Engineering Design Lab	2
CIS 520	Operating Systems I	3
Complementary electives		5
Humanities or social science elective		3
		17

*The prerequisite for ENGL 415 is satisfied with an A or B in ENGL 100. Otherwise students must take ENGL 200, which, if necessary, may be substituted for 3 credit hours of complementary electives.

Humanities and social science electives are to be selected from the approved list and need not be taken in the order listed in the curriculum. (Two courses must be 300 or above).

Complementary electives must include an approved engineering science course in either engineering materials, thermodynamics, or flow and rate processes. The complementary electives may include a maximum of 6 semester hours from Electrical and Computer Engineering courses. Any student may apply a maximum of 4 hours of basic ROTC credit toward the complementary elective requirements without being required to take more credits than non-ROTC students.

Electrical and computer engineering courses

EECE 241. Introduction to Computer Engineering. (3) I, II. Simple coding schemes, Boolean algebra fundamentals, elements of digital building blocks such as gates, flip-flops, shift registers, memories, etc., basic engineering aspects of computer architecture. Two hours lec. and two hours lab a week.

EECE 431. Microcontrollers. (3) I, II. Architecture, assembly language, programming, serial and parallel input/output and applications. Two hours rec. and three hours lab a week. Pr.: EECE 241 and CIS 200 or 209.

EECE 499. Honors Research in Electrical and Computer Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering honors program. A report is presented orally and in writing during the last semester.

EECE 501. Electrical Engineering Laboratory I. (2) I, II. Electrical engineering laboratory experiments on topics selected from and correlated with the concurrent or prerequisite courses. One hour lec. and three hours lab a week. Pr.: EECE 241 and 510. Pr. or conc.: EECE 511 and 525.

EECE 502. Electrical Engineering Laboratory II. (2) I, II. Continuation of Electrical Engineering Laboratory I. One hour lec. and three hours lab a week. Pr.: EECE 501, 511, and 525. Pr. or conc.: EECE 526.

EECE 510. Circuit Theory I. (3) I, II. An introduction to linear circuit theory; analysis of linear circuits containing resistance, inductance, and capacitance. Three hours rec. a week. Pr.: MATH 222, and PHYS 213.

EECE 511. Circuit Theory II. (3) I, II. Analysis of electric circuits using differential equations, state equations, transform techniques and linear algebra. Three hours rec. a week. Pr.: PHYS 214, MATH 240, and EECE 510.

EECE 512. Linear Systems. (3) I, II. An introduction to linear system fundamental concepts and analytical methods. Analytical concepts presented are signal representation and classification, statistical parameters, convolution, Fourier analysis signal sampling, and discrete transforms. Three hours rec. a week. Pr.: EECE 511, STAT 510, and CIS 208 or 209.

EECE 519. Electric Circuits and Control. (4) I, II, S. Principles of direct-current circuits and machines, alternating-current circuits and machines, electronics, and application to instrumentation and control. Four hours rec. a week. Not open to EECE students. Pr.: PHYS 214.

EECE 525. Electronics I. (3) I, II. Fundamentals of electronic components, devices, and circuits. Three hours rec. a week. Pr.: EECE 510 or 519.

EECE 526. Electronics II. (3) I, II. Continuation of Electronics I. Three hours rec. a week. Pr.: EECE 511 and 525.

EECE 530. Control Systems Design. (3) I, II. Modeling, analysis, and design of control systems. Three hours rec. a week. Pr,: EECE 512.

EECE 535. Control Systems Laboratory. (3) I, II. The design and testing of feedback control systems. Two hours rec. and three hours lab a week. Pr.: EECE 431 and EECE 502. Pr. or conc.: EECE 530.

EECE 541. Design of Digital Systems. (3) I, II. Design of combinational and sequential systems and peripheral interfaces. Emphasis is placed on hardware description languages, computer aided design tools and simulations. Three hours rec. a week. Pr.: EECE 431 and 510 or EECE 431 and PHYS 214.

EECE 543. Computer System Interfacing Lab. (1) I, II. Practical aspects of computer system interfacing including concepts of hardware and software design and debugging. Additionally implementations of interrupts and device drivers will be covered. Three hours lab a week. Pr.: CIS 208 or 209 and EECE 541.

EECE 557. Electromagnetic Theory I. (4) I, II. Vector analysis, electrostatics, magnetostatics, Faraday's Law, Maxwell's Equations, transmission lines, and applications. Four hours rec. a week. Pr.: PHYS 214 and EECE 510.

EECE 571. Introduction to Biomedical Engineering. (1) I. Introduction to quantitative analysis techniques as applied to the study of physiological systems and their associated biological signals. One hour rec. a week. Pr.: MATH 222.

EECE 581. Energy Conversion. (3) I, II. Energy conversion principles and their application to electric energy converters operating in the static and the dynamic mode. Three hours rec. a week. Pr.: EECE 510 or EECE 519.

EECE 589. Circuits and Machines Lab. (2) I, II. Practical aspects of electrical circuits, transformers, and electrical motors and generators. One hour lec. and two hours lab a week. Not open to EECE students. Pr.: EECE 519.

EECE 590. Seminar. (1) I, II. Preparation and oral presentation of a written technical report. One hour rec. a week. Pr.: DEN 275 and ENGL 415.

EECE 603. Advanced Electrical Engineering Laboratory. (2) On sufficient demand. A project-oriented laboratory in which a small group of students works with a faculty member in a special area of interest. Projects usually involve design, measurement methods, or experimental work. May be repeated once. Pr.: EECE 502.

EECE 624. Power Electronics. (3) I. Theory and application of semiconductor devices to the control and conversion of electric power, control of DC and AC machines, design of electronic power circuits such as inverters, controlled rectifiers, and choppers using diodes, diacs, thyristors, triacs, and power transistors. Three hours rec. a week. Pr.: EECE 581 and 512. Pr. or conc.: EECE 526.

EECE 628. Electronic Instrumentation. (3) I, II. Applications of electronics in the design of analog and digital systems for the measurement of physical variables and in the transduction of these variables into a useful form for both recording and control. Two hours rec. and three hours lab a week. Pr.: EECE 502 and 526.

EECE 631. Microcomputer Systems Design. (3) I, II. Design and engineering application of 16 and 32 bit microcomputers to instrumentation and control. Timing and other interfacing problems will be covered. Two hours rec. and three hours lab a week. Pr.: EECE 525 and 431.

EECE 632. Engineering Applications of Microcomputer Systems. (3) On sufficient demand. Elements of digital building blocks and number systems. Computer systems organization, memories, microcomputer fundamentals. Applications of microcomputer systems. Not available for students with credit for EECE 241. Two hours rec. and three hours lab a week. Pr.: PHYS 214; high-level programming language.

EECE 636. Introduction to Computer Graphics. (3) I, II. An introduction to the hardware and software aspects of graphics generation. Programming assignments will provide practical experience in implementing and using standard graphics primitives and user interfaces. Three hours rec. a week. Pr.: CIS 208 or 209, and 300.

EECE 643. Computer Engineering Design Lab. (2) I, II. The design and construction of small computer systems covering necessary practical considerations such as signal propagation and timing. Three hours lab a week. Pr. or conc.: EECE 543 and 649.

EECE 645. Digital Electronics. (3) I, II. The characteristics and performance of the major contemporary digital logic families. Three hours rec. a week. Pr.: EECE 525, 557, and 541.

EECE 647. Digital Filtering. (3) I. Difference equation characterization of digital filters, transient and steady-state analysis of digital filters using the Z-transform, spectral analysis of digital signals, design and implementation of digital filters. Three hours rec. a week. Pr.: EECE 512.

EECE 649. Computer Design I. (3) I, II. Concepts of computer design. Information representation, instruction sets, and addressing modes. Arithmetic and logic unit design for fixed and floating point operations. Hardwired and microprogrammed control design. Concepts of pipelining, CISC and RISC architecture. Memory system design including virtual memory, caches, and interleaved memories. I/O design methods, interrupt mechanisms, DMA and system integration. Three hours rec. a week. Pr.: EECE 541.

EECE 659. Wave Guides, Antennas, and Propagation. (3) I, in even years. Applications of Maxwell's equations to boundary value problems, guided transmission, cavities, radiation, and propagation. Three hours rec. a week. Pr.: EECE 557.

EECE 660. Communication Systems I. (3) I. Introduction to the analysis and design of analog and digital communication systems. Topics include analog and digital modulation schemes, digital encoding of messages, mathematical modeling of communication systems, noise in communication links, and calculation of performance measures for practical links. Three hours rec. a week. Pr. or conc.: EECE 512.

EECE 661. Communications Systems II. (3) II. Analysis and design of digital communications systems. Topics include signal spaces, the derivation of optimum receivers for the white noise channel, modeling of bandpass systems, determination of the power spectrum of a random digital signal, multiple access methods, fading channels, error correction codes, and simulation of practical digital transmission systems. Three hours rec. a week. Pr.: EECE 660.

EECE 662. Design of Communication Circuits. (3) I, II. The design and performance testing of common communication circuits. Topics include tuned amplifiers, impedance matching, oscillators, filters, transmission lines, and phase locked loops. Two hours rec. and three hours lab a week. Pr.: EECE 526 and 502.

EECE 663. Digital Error Control Coding. (3) II, in odd years. An introduction to the subject of error-correcting and error-detecting codes, both block and convolutional. Emphasis is placed on practical means of encoding and decoding the most commonly used codes such as Hamming, BCH, and Reed-Solomon codes. Three hours rec. a week. Pr.: EECE 241, STAT 510, and CIS 208 or 209.

EECE 670. Engineering Applications of Machine Intelligence. (3) II. Study of machine intelligence and fuzzy logic concepts and applications in engineering problem domains. As a term project, develop a fuzzy expert system for a specific problem domain that runs on a personal computer and develop the supporting documentation. Pr.: CIS 200 or 209, and PHYS 214. Three hours rec. a week.

EECE 681. Wind Engineering. (3) On sufficient demand. Wind characteristics, turbine performance, synchronous and asynchronous electrical loads, siting, economics, and wind farm design. Three hours rec. a week. Pr.: ME 512 or CE 530; and EECE 525 or 519.

EECE 683. Power Devices. (3) II. The design of systems for the control and measurement of large voltages and currents, using power MOSFETs, other solid state switches, resonant transformers, Hall effect sensors, optoisolators, and fiber optics. Two hours rec. and three hours lab a week. Pr.: EECE 501, 525, and 581.

EECE 685. Power Systems Design. (3) I. A comprehensive study of modeling of the electric power system components and computer simulation of interconnected power systems in steady state. Vector-matrix descriptions are emphasized. Three hours rec. a week. Pr.: EECE 581.

EECE 686. Power Systems Protection. (3) II. Analysis of symmetrical and unsymmetrical faults on power systems using symmetrical components technique. Study of protective relaying for protection of power systems against faults. Vector-matrix descriptions and computer solutions are emphasized. Three hours rec. a week. Pr.: EECE 581.

EECE 690. Problems in Electrical and Computer Engineering. (Var.) I, II, S.

EECE 694. Optoelectronics. (3) I. Applied geometric and physical optics, optical radiation, and the interaction of light and matter. The theory and application of photodetectors, lasers, and other photoemitters. Introduction to fiber optical waveguides, sensors, and systems. Three hours rec. a week. Pr.: EECE 525, 557, and CHE 350.

EECE 696. Integrated Circuit Design. (3) I. Study of silicon integrated circuits with emphasis on CMOS analog and digital applications. The course covers basic device structure and modeling, circuit analysis, system design, IC design methodology and economics, plus IC fabrication processes. Computer-aided design tools are used to simulate and layout circuits designed by student groups. The circuits are fabricated by an external service (MOSIS). Three hours rec. a week. Pr.: EECE 241 and 525.

EECE 725. Integrated Circuit Devices and Processes. (3) II. An introduction to integrated circuit fabrication processes including oxidation, diffusion, masking, etching, process monitoring and device characterization. Design of bipolar and MOS circuits through laboratory experiments and computer simulations. Two hours rec. and three hours lab a week. Pr.: EECE 696 and CHE 350.

EECE 728. Mixed Signal Measurements. (3) II. Signal classification, noise and uncertainty, TRMS conversion, quantization and ADCs, repetitive sampling and signal recovery techniques, vector voltmeters, basic network analyzers. Three hours rec. a week. Pr.: EECE 512 or graduate standing.

EECE 730. Control Systems Analysis and Design. (3) On sufficient demand. Use of classical analysis techniques for control system compensation. State space control theory fundamentals are presented in addition to an introductory treatment of several major systems areas. Three hours rec. a week. Pr.: EECE 530 or ME 640. Same as ME 730.

EECE 731. Advanced Microcomputer System Design. (3) II, in even years. Design and engineering applications of 16 and 32 bit microprocessors. Utilization of peripheral and co- processor chips. Two hours rec. and three hours lab a week. Pr.: EECE 631.

EECE 736. Discrete-Time and Computer-Control Systems. (3) II. Analysis and design of discrete-time, sampled-data, and computer-control systems using discrete-state equations and Z-transforms. Three hours rec. a week. Pr.: EECE 530 or ME 640.

EECE 742. Data Communications. (3) I. The design and testing of popular local area networks for computers. Topics include topologies, media, signalling and modulation, testing, system design and installation. Emphasis on physical and data link layers of the Open System Interface (OSI) model. Three hours rec. a week. Pr.: EECE 512 or CIS 500.

EECE 746. Fault Diagnosis in Digital Systems. (3) II, in odd years. Hazards, fault detection in combinational circuits, and sequential machines using path sensitizing and fault-matrix methods, state table analysis, etc.; system reliability through logical redundance. Three hours rec. a week. Pr. or conc.: EECE 541 or 631.

EECE 747. Digital Signal Processing Laboratory. (3) II. Digitization of analog signals; demonstration of aliasing problems; spectral analysis of digital signals using Fourier and other signal representation techniques; digital filtering problems; applications related to biomedical and speech data. Two hours lec. and three hours lab a week. Pr.: EECE 512. Pr. or conc.: EECE 647.

EECE 749. Computer Design II. (3) I. Study of alternate computer hardware structures. Investigation of engineering tradeoffs in implementation of alternative instruction sets and computing structures. Emphasis will be placed on a quantitative approach to cost/performance evaluations including simulation of hardware structures. Three hours rec. a week. Pr.: EECE 649.

EECE 758. Electromagnetic Theory II. (3) I, in odd years. Continuation of EECE 557. Three hours rec. a week. Pr.: EECE 557.

EECE 771. Control Theory Applied to Bioengineering. (3) II. Development of mathematical models used in the study and analysis of physiological control systems providing techniques for varying pertinent biological parameters. Three hours rec. a week. Pr. or conc.: EECE 530 or ME 640, and a basic physiology course.

EECE 772. Theory and Techniques of Bioinstrumentation. (3) I, in even years. Theoretical aspects of biological signals, electrodes, transducers, and processing equipment with emphasis on the acquisition and recording of the responses to electrical potentials, pressure, and flow measurements. Three hours rec. a week. Pr.: EECE 771 or consent of instructor.

EECE 773. Bioinstrumentation Laboratory. (1) I, in even years. Practical experience with and evaluations of laboratory and clinical techniques related to electrodes, transducers, and monitoring equipment. Emphasis is on instrumentation for the respiratory, cardiovascular, and nervous systems. Three hours lab a week. Pr.: Conc. enrollment in EECE 772 and AP 773.

Industrial and Manufacturing Systems Engineering

Bradley A. Kramer,* Head

Professors Azadivar,* Harnett,* Hwang,* Konz,* E.S. Lee,* and Tillman;* Associate Professors Ben–Arieh,* Chang,* Kramer,* Rys,* and Wilson; Assistant Professors Lavelle,* Ordoobadi, and Wu;* Emeriti: Professor D. Grosh; Associate Professors L. Grosh, Hansen, and Willems; Adjunct Professors Amos and Galitzer.*

http://cheetah.imse.ksu.edu/home.html

Degrees

The department of industrial and manufacturing systems engineering offers two accredited degree programs: industrial engineering and manufacturing systems engineering.

Industrial engineering

Industrial engineers design, analyze, and improve integrated systems of people, equipment, and material to produce goods and services. They are concerned with the effective utilization of all organizational resources to maximize system productivity. The industrial engineer is equipped to influence product designs, develop efficient production systems, and to integrate these activities with the financial, marketing, and other functions of an organization. The goal of the industrial engineering curricula is to integrate mathematics, the basic sciences, the engineering sciences, and engineering design projects into a meaningful educational experience so that our graduates have the ability to apply this knowledge to the identification and solution of practical engineering problems. Our graduates are equally prepared to begin exciting careers in engineering or to continue their education in graduate programs of engineering, business, or law.

The curriculum provides an education in each of the basic functional areas of industrial engineering: engineering management, ergonomics, manufacturing systems engineering, and operations research. Students are individually advised and counseled by the faculty to choose electives to broaden their education and to emphasize subjects of interest.

Courses are available in computer simulation, operations research, industrial management, ergonomics, safety, manufacturing information systems, quality engineering, project evaluation, automated factory concepts, product and process engineering, computer control of manufacturing equipment, robotics, and the design and analysis of manufacturing systems.

The curriculum is augmented by an industrial engineering assembly held once each month in which engineers from industry are invited to speak about topics of current interest to the profession.

Manufacturing systems engineering

The manufacturing systems engineering program is of particular interest to students interested in a career in designing, analyzing, and improving modern manufacturing systems. This program provides a basic background in modern manufacturing engineering, manufacturing systems engineering, and industrial engineering principles.

Graduates of this program will have a strong background in the use of computers in integrating all phases of a manufacturing enterprise. Manufacturing subjects covered in the curriculum include: computer aided manufacturing, engineering materials, ergonomics, facilities layout and design, industrial simulation, manufacturing processes, manufacturing information systems, product and process engineering, and statistical quality control. The program culminates with a team project to design and implement a working manufacturing system to mass produce a product.

Industrial engineering (IE)

Bachelor of science in industrial engineering
134 hours required for graduation
Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

Freshman

Fall semester

MATH 220	Analytic Geometry and Calculus I	4
CHM 210	Chemistry I	4
ENGL 100	Expository Writing I*	3
IMSE 201	Introduction to Industrial Engineering	3
Humanities or social science elective		3
IMSE 015	Engineering Assembly	0
		17

Spring semester

MATH 221	Analytic Geometry and Calculus II	4
CHM 230	Chemistry II	4
CIS 209	C Programming for Engineers	3
ME 212	Engineering Graphics I	2
Humanities or social science elective		3
IMSE 015	Engineering Assembly	0
		16

Sophomore

Fall semester

MATH 222	Analytic Geometry and Calculus III	4
PHYS 213	Engineering Physics I	5
ACCTG 231	Accounting for Business Operations	3
SPCH 105	Public Speaking IA	2
ECON 110	Principles of Macroeconomics	3
IMSE 015	Engineering Assembly	0
		17

Spring semester

MATH 240	Elementary Differential Equations	4
PHYS 214	Engineering Physics II	5
IMSE 242	Introduction to Manufacturing Engineering	3
CHE 352	Engineering Materials I	3
Restricted elective		3
IMSE 015	Engineering Assembly	0
		18

Junior

Fall semester

STAT 510	Introduction to Probability and Statistics I	3
IMSE 530	Industrial Project Evaluation	3
IMSE 560	Introduction to Operations Research I	3
IMSE 623	Industrial Ergonomics	3
EECE 519	Electric Circuits and Controls	4
IMSE 015	Engineering Assembly	0
		16

Spring semester

STAT 511	Introduction to Probability and Statistics II	3
IMSE 660	Introduction to Operations Research II	3
Literature elective		3
CE 530	Statics and Dynamics	4
ENGL 415	Written Communication for Engineers*	3
IMSE 015	Engineering Assembly	0
IMSE 050	Industrial Plant Studies	0
		16

Senior

Fall semester

IMSE 541	Statistical Quality Control	3
IMSE 591	Senior Design Project I**	2
IMSE 633	Production Planning and Inventory Control	3
IMSE 643	Industrial Simulation	3
IMSE elective		3
Humanities or social science elective		3
IMSE 015	Engineering Assembly	0
		17

Spring semester

IMSE 501	Industrial Management	3
IMSE 555	Industrial Facility Layout Design	3
IMSE 592	Senior Design Project II	2
IMSE electives		6
Humanities or social science elective		3
IMSE 015	Engineering Assembly	0
		17

*The prerequisite for ENGL 415 is satisfied with an A or B in ENGL 100. Otherwise students must take ENGL 200, which, if necessary, may be substituted for 3 hours of restricted elective.

**IMSE 580 may be substituted for IMSE 591 and IMSE 592. Students should sign up in the IMSE department office at the beginning of the fall semester if they intend to take IMSE 580 in the following spring semester.

Humanities and social science electives are to be selected from the catalog list, need not be taken at the time shown in the curriculum, and must include two courses at or above the 300 level.

Literature elective must be selected from ENGL 262, 272, 320, 330, 340, or 390.

Restricted elective must be selected from engineering, mathematics or computer science, economics, statistics, ROTC, and business administration courses, or ENGL 200, if necessary.

An IMSE elective is any course in industrial engineering below the 800 level.

Manufacturing systems engineering (MFSE)

Bachelor of science in manufacturing systems engineering.
134 hours required for graduation
Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

Freshman

Fall semester

MATH 220	Analytic Geometry and Calculus I	4
CHM 210	Chemistry I	4
ENGL 100	Expository Writing I*	3
ECON 110	Principles of Macroeconomics	3
Humanities or social science elective		3
IMSE 015	Engineering Assembly	0
		17

Spring semester

MATH 221	Analytic Geometry and Calculus II	4
CHM 230	Chemistry II	4
CIS 209	C Programming for Engineers	3
ME 212	Engineering Graphics I	2
Humanities or social science elective		3
IMSE 015	Engineering Assembly	0
		16

Sophomore

Fall semester

MATH 222	Analytic Geometry and Calculus III	4
PHYS 213	Engineering Physics I	5
SPCH 105	Public Speaking IA	2
IMSE 242	Intro. to Mfg. Engg.	3
Literature elective		3
IMSE 015	Engineering Assembly	0
		17

Spring semester

MATH 240	Elementary Differential Equations	4
PHYS 214	Engineering Physics II	5
CHE 352	Engineering Materials I	3
Restricted elective		3
Humanities or Social Science Elective		3
IMSE 015	Engineering Assembly	0
		18

Junior

Fall semester

STAT 510	Introduction to Probability and Statistics I	3
IMSE 530	Industrial Project Evaluation	3
IMSE 623	Industrial Ergonomics	3
EECE 519	Electric Circuits and Controls	4
CE 530	Statics and Dynamics	4
IMSE 015	Engineering Assembly	0
		17

Spring semester

STAT 511	Introduction to Probability and Statistics II	3
IMSE 560	Introduction to Operations Research I	3
IMSE 563	Manufacturing Processes Engineering	4
ENGL 415	Written Communication for Engineers*	3
IMSE elective		3
IMSE 015	Engineering Assembly	0
IMSE 050	Industrial Plant Studies	0
		16

Senior

Fall semester

IMSE 541	Statistical Quality Control	3
IMSE 564	Product and Process Engineering	3
IMSE 662	Computer Aided Manufacturing	3
IMSE 633	Production Planning and Inventory Control	3
IMSE 643	Industrial Simulation	3
IMSE elective		2
IMSE 015	Engineering Assembly	0
		17

Spring semester

IMSE 555	Industrial Facility Layout Design	3
IMSE 580	Manufacturing Systems Design and Analysis	4
IMSE 685	Manufacturing Information Systems	3
IMSE elective		3
Humanities or social science elective		3
IMSE 015	Engineering Assembly	0
		16

*The prerequisite for ENGL 415 is satisfied with an A or B in ENGL 100. Otherwise students must take ENGL 120, which, if necessary, may be substituted for 3 hours of restricted elective.

Humanities and social science electives are to be selected from the catalog list, need not be taken at the time shown in the curriculum, and must include two courses at or above the 300 level.

Literature elective must be selected from ENGL 262, 272, 320, 330, 340, or 390.

Restricted elective must be selected from engineering, mathematics or computer science, economics, statistics, ROTC, and business administration courses, or ENGL 120, if necessary.

An IMSE elective is any course in industrial engineering below the 800 level.

Industrial and manufacturing systems engineering courses

IMSE 015. Engineering Assembly. (0) I, II. Assemblies are held once a month for practicing industrial engineers to make presentations to the students. Students are given an opportunity to interact with the visitors. The purpose is to provide an opportunity to learn about various companies and their products and operations. Required every semester.

IMSE 050. Industrial Plant Studies. (0) II. Trip to industrial centers for study of facilities of special interest to industrial engineering students. Pr.: Junior standing in industrial engineering.

IMSE 201. Introduction of Industrial Engineering. (3) I. Introduction to the major functions of industrial engineers with emphasis on the analysis, design and control of production systems. Two hours lec. And two hours lab week.

IMSE 241. Production Processes. (3) I, II. A survey of basic manufacturing processes used in modern industry. Topics include measurement, metal machining, welding, casting, hot and cold press forming processes, heat treatment, powdered metals, plastics, and an introduction to automation. Hands-on experience in measurement, machining, welding, and casting. Two hours rec. and four hours lab a week. Not for industrial engineering majors. Pr.: ME 212.

IMSE 242. Introduction to Manufacturing Engineering. (3) I, II. A survey of basic manufacturing processes, including: measurement, casting, metal machining, welding, hot and cold press forming processes, heat treatment, powdered metals and plastic molding; and including hands-on experience. An introduction to design of manufacturing processes. Two hours rec. and four hours lab a week. Pr.: ME 212.

IMSE 373. Computer Applications in Industrial Engineering. (2) I, II. Use of operating systems, applications of software in engineering economy, mathematical programming, statistical analysis, and management reporting systems. One hour lec. and three hours lab a week. Pr.: NE 385 or equivalent.

IMSE 499. Honors Research in Industrial Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering honors program. A report is presented orally and in writing during the last semester.

IMSE 501. Industrial Management. (3) I, II. Basic functions in an industrial organization and their interrelationships; management considerations involving product, process, plant, and personnel. Three hours rec. a week.

IMSE 530. Industrial Project Evaluation. (3) I, II. The evaluation of industrial project alternatives by the construction and analysis of mathematical models. Basic concepts, with an emphasis on constrained and unconstrained deterministic and probabilistic evaluation methodology, data analysis, and replacement theory. Three hours rec. a week. Pr.: MATH 222 and CIS 209.

IMSE 541. Statistical Quality Control. (3) I, II. Normal, binomial, and frequency distributions. Seven process improvement tools. Control charts on means and variances for variables and attributes. Design of experiments for process and product design. Acceptance sampling plans. Two hours rec. and two hours lab. a week. Pr.: CIS 209, Pr. or conc.: STAT 511.

IMSE 555. Industrial Facilities Layout and Design. (3) I, II. Design of industrial facilities with emphasis on manufacturing engineering and material handling. Two hours rec. and two hours lab a week. Pr.: IMSE 623.

IMSE 560. Introduction to Operations Research I. (3) I, II. A study of the methods of operations research including model formulation and optimization. Topics include: assignment/transportation problems, linear programming, network flows. Three hours lec. a week. Pr.: CIS 209 and MATH 222.

IMSE 563. Manufacturing Processes Engineering. (4) II. The effects of operating variables on manufacturing processes such as machining, metal forming, casting, welding, plastics, etc. Emphases are on manufacturing process theory, process variables measurement, and the technical inferences of collected data. Strength of materials, manufacturing process theory, instrumentation, computer data acquisition, and data analysis concepts are included. Laboratory testing of manufacturing processes and the engineering design of experiments for process variable measurements are used to develop efficient manufacturing processes. Three hours rec. and three hours lab a week. Pr.: IMSE 241 or IMSE 242, CHE 352, CE 530 or statics equiv.

IMSE 564. Product and Process Engineering. (3) I. A study of the interrelationships between product design and production process selection. Emphasis is on the development of economic production systems for discrete products in a competitive manufacturing environment. Concepts of design for manufacture and assembly, tool engineering, and manufacturing systems design are included. Two hours lec. three hours lab per week. Pr.: IMSE 563. Pr. or conc.: IMSE 530.

IMSE 575. Quantitative Techniques in Industrial Engineering. (3) I, II. Problem formulation and conceptual models; application of finite mathematics and other techniques to problems of industrial engineering and management. Three hours rec. a week. Pr.: MATH 222.

IMSE 580. Manufacturing Systems Design and Analysis. (4) II. Comprehensive design and analysis of a manufacturing system; integration of the undergraduate industrial engineering and manufacturing engineering option courses. Two hours rec. and four hours lab a week. Pr.: IMSE 530, IMSE 623, IMSE 633. Pr. or conc.: IMSE 541.

IMSE 591. Senior Design Project I. (2) I, II. Students organize themselves in teams, not exceeding five students in each team. The teams select a general subject, formulate a specific design project, and gather data and resources needed to support the project. Two hours rec. a week. Pr.: IMSE 530, 623.

IMSE 592. Senior Design Project II. (2) I, II. Continuation of IMSE 591 in which student teams complete engineering design projects formulated and approved in IMSE 591. Two hours rec. a week. Pr. or conc.: IMSE 591.

IMSE 601. Introduction to Systems Management. (3) II. A general introduction to the formulation and mathematical solution of management and business problems. Includes the formulation of business and management problems and their solutions, utilizing optimization theory, finite mathematics, and statistical techniques. Taught at Fort Leavenworth only. Three hours rec. a week. Pr.: MATH 222 and consent of instructor.

IMSE 602. Topics in Industrial Engineering. (Var.) I, II. S. Lectures on recent topics in industrial engineering.

IMSE 604. Independent Study of Industrial Engineering. (Var.) I, II, S. This course involves independent study of recent topics in industrial engineering.

IMSE 605. Advanced Industrial Management. (3) I. Managing groups of employees in engineering settings, theory of organization design; designing engineering and technological organizations; professionalism and ethical considerations in engineering. Three hours lec. a week. Pr.: IMSE 501.

IMSE 610. Occupational Safety Engineering. (3) II. An overview of factors affecting safety in organizations, emphasizing analysis techniques and design strategies. Topics include occupational safety, accidents, fire protection, industrial hygiene, hazardous waste, toxicology, radiation safety, product liability, and federal standards. A project involving a hazard analysis and the design of solutions for a field location is required. Three hours lec. a week. Pr.: IMSE 242.

IMSE 612. Hazardous Materials Management. (2) I. All aspects from generation to final disposal will be studied, including: identifying hazardous materials, chemical safety, storing and shipping chemicals, and treatment and disposal of hazardous wastes. Two hours lec. a week. Pr.: CHM 230.

IMSE 623. Industrial Ergonomics. (3) I, II. Process analysis and charting; principles of motion economy and ergonomics; work stations and environments; micromotion analysis and an introduction to standard data systems. Two hours rec. and three hours lab a week. Pr.: IMSE 242.

IMSE 625. Work Environments. (3) II. Basic structure and performance of the human, viewed as a component in information processing and control systems. Effect of visual, auditory, toxic, and thermal environments. Two hours rec. and two hours lab a week. Pr.: IMSE 242.

IMSE 633. Production Planning and Inventory Control. (3) I, II. Principles, techniques, and applications of production planning and inventory control. Design of control systems. Three hours rec. Pr.: IMSE 242. Pr. or conc.: IMSE 560.

IMSE 641. Statistical Process in Manufacturing. (3) II. An introduction to the modern practice of Statistical Process Control in manufacturing. The course surveys the use of advanced techniques related to SPC such as expert systems in SPC implementations and the role of SPC in a Computer Integrated Manufacturing (CIM) environment. Three hours lec. a week. Pr.: STAT 511, knowledge of Lotus 123/Quattro or SAS.

IMSE 643. Industrial Simulation. (3) I, II. Computer simulation modeling of industrial systems emphasizing the design, verification and validation of the models and the use of the model as a systems design tool. Three hours rec. Pr.: IMSE 560. Pr. or conc.: STAT 511.

IMSE 651. Standard Data Systems. (3) II. Taught off campus at Fort Leavenworth only. Microscopic and macroscopic standard data systems; commercial versions; company-developed plans; programmed standard data systems. Three hours rec. a week. Pr.: NE 385.

IMSE 652. Industrial Ergonomics. (3) I, II. The design process, work analysis techniques, principles of work organization, work station, and hand tools. Facilities management. Lighting, noise, and industrial hygiene. Time determination. Work standards. Taught at Fort Leavenworth only. Three hours rec. a week. Pr.: consent of instructor.

IMSE 660. Introduction to Operations Research II. (3) I, II. Continuation of IMSE 560. Topics include decision theory, Markov processes, queueing theory, nonlinear programming, dynamic programming. Three hours lec. a week. Pr.: IMSE 560, STAT 510.

IMSE 662. Computer Aided Manufacturing. (3) I. Concepts in CAM, integrated control of machine tools and transport devices with production control. Concepts of CAM and automated assembly in small lot production environment. Two hours lec. and three hours lab a week. Pr.: IMSE 242 and CIS 209 or equiv.

IMSE 671. Topics in Automated Factory Concepts. (3) I. Introduction to concepts of automation, automatic transfer lines, and CAD/CAM. Emphasis on robots and their role in automated factories. Concepts of group technology, computer-aided process planning, automated material-handling equipment for automated factories. Three hours lec. a week. Pr.: IMSE 633 and 662.

IMSE 672. Robotic Applications. (3) II. History, development of the work environment for robots, their application, and implementation. Concepts of control and sensory feedback in robots are covered. Three hours lec a week. Pr.: IMSE 242 and CIS 209.

IMSE 685. Principles of Manufacturing Information Systems. (3) II. Introduction to the theory and concepts of information for manufacturing. Design of manufacturing systems such as MRP, SFRS, CAD/CAM, etc. Concerns of integration and man-machine interface in manufacturing systems. Three hours lec. a week. Pr.: IMSE 633.

IMSE 751. Applied Decision Theory. (3) II, in alternate years. Bayes' theorem, Bayesian estimators, utility, loss function and risk, minimax strategies, elementary game theory. Three hours rec. a week. Pr.: STAT 511 or equiv.

IMSE 780. Methods of Operations Research. (3) II. This course is intended to give an overview of OR at the graduate level. After this course, the student will have the general basic knowledge in OR and a better idea about the usefulness and interrelationships of the various subjects in OR. Topics to be covered include the various optimization techniques, stochastic processes and optimization, and the various approaches in the treatment of uncertainty. Three hours rec. a week. Pr.: MATH 222 and STAT 510.

Mechanical and Nuclear Engineering

J. Garth Thompson, * Interim Head

Professors Eckhoff,* Faw,* Fenton,* Jones,* Shultis,* Simons,* Swenson,* Thompson,* and Walker;* Associate Professors Beck,* Chapman,* Eckels,* Gorder,* Hosni,* Krishnaswami,* Madanshetty,* Pacey,* Reichert,* and White;* Assistant Professors Hightower, Kelkar,* Lease,* Meng,* and Wang.* Emeriti: Professors Appl,* Azer,* Ball, Donnert,* Gorton,* Gowdy,* Huang,* Lindholm, Merklin,* Nesmith, Pauli, Rohles, Turnquist, and Wood.

http://www.ne.ksu.edu

Mechanical engineering is a broad profession that traditionally comprises three primary subfields: energy, mechanisms and machinery, and controls. The work done by mechanical engineers includes the design, construction, and use of systems for the conversion of energy available from natural sources (water, fossil fuels, nuclear fuels, solar radiation) to other forms of useful energy (for transportation, heat, light, power); design and production of machines to lighten the burden of servile human work and to do work otherwise beyond human capability; processing of materials into useful products; and creative planning, development, and operation of systems using energy, machines, and resources; and manufacturing.

The curriculum includes engineering science courses in the sophomore and junior years and engineering application courses in the junior and senior years. Laboratory courses and humanities and social science electives are found throughout the curriculum. The laboratory and application courses provide opportunity for development of student creativity, use of design methodology, and other aspects of engineering design.

The entire curriculum serves as preparation for the industrial design project where a team of three to five students is assigned to work on a realistic engineering problem supplied by an industrial sponsor. This brief internship gives new mechanical engineering graduates the experience and confidence to move quickly into productive and satisfying careers.

Because of the broad and fundamental nature of the curriculum, mechanical engineering provides an excellent background for careers in such fields as law, medicine, social services, urban design, and business management in addition to traditional engineering professions.

Individual programs

The electives in the curriculum provide the opportunity for students to develop skills of individual interest. Students with clear career objectives may be permitted to substitute appropriate courses for some of the required courses. For example, students interested in the aerospace industry can choose elective courses in propulsion, aerodynamics, aircraft stability and control, and composite materials. A special interest in automobiles may prompt students to choose elective courses in internal combustion engines, machine vibrations, composite materials, and thermodynamic analysis. The combinations are extensive.

The nuclear engineering option prepares students for professional positions in industry, government, private practice, and postgraduate studies in the application of nuclear technology. Engineering fundamentals are emphasized throughout the curriculum with the nuclear engineering courses in the junior and senior years. Students may organize a program suited to their particular needs and interests. Students may elect a program leading to specialized engineering practice or to postgraduate study in engineering, science, medicine, business, or law.

Curriculum in mechanical engineering (ME)

Bachelor of science in mechanical engineering
135 hours required for graduation
Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

Freshman

Fall semester

CHM 210	Chemistry I	4
ENGL 100	Expository Writing I*	3
MATH 220	Analytic Geometry and Calculus I	4
SPCH 105	Public Speaking IA	2
Humanities or social science elective		3
ME 015	Mechanical Engineering Seminar	0
		16

Spring semester

CHM 230	Chemistry II	4
Humanities or social science elective		3
MATH 221	Analytic Geometry and Calculus II	4
ME 212	Engineering Graphics	2
ECON 110	Principles of Macroeconomics	3
ME 015	Mechanical Engineering Seminar	0
		16

Sophomore

Fall semester

MATH 222	Analytic Geometry and Calculus III	4
PHYS 213	Engineering Physics I	5
IMSE 241	Production Processes	3
CIS 209	C Programming for Engineers	3
CHE 352	Engineering Materials I	3
ME 015	Mechanical Engineering Seminar	0
		18

Spring semester

MATH 240	Elementary Differential Equations	4
PHYS 214	Engineering Physics II	5
ME 300	Introduction to ME Design	2
CE 333	Statics	3
ME 400	Computer Applications in Mechanical Engineering	2
ME 015	Mechanical Engineering Seminar	0
		16

Junior

Fall semester

CE 533	Mechanics of Materials	3
EECE 519	Electric Circuits and Control	4
ME 512	Dynamics	3
ME 513	Thermodynamics I	3
Humanities or social science elective		2
STAT 490	Stat for Engineers I	1
STAT 491	Stat for Engineers II	1
ME 015	Mechanical Engineering Seminar	0
		17

Spring semester

EECE 589	Circuits and Machines Lab	2
ME 570	Mechanical System Dynamics	4
ME 533	Machine Design I	3
ME 535	Measurement and Instrumentation Laboratory	3
ME 571	Fluid Mechanics	3
ENGL 415	Written Communication for Engineers	3
ME 015	Mechanical Engineering Seminar	0
		18

Senior

Fall semester

ME 523	Thermodynamics II	3
ME 573	Heat Transfer	3
ME 560	Engineering Economics	2
Technical electives		3
ME 640	Automatic Controls	3
ME 574	Experimental Methods and Design Lab	3
ME 015	Mechanical Engineering Seminar	0
		17

Spring semester

ME 563	Machine Design II	3
ME 575	Mechanical Engineering Industrial Design Project	3
Technical electives		6
Humanities or social science elective		5
ME 015	Mechanical Engineering Seminar	0
		17

*Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from Expository Writing I.

Humanities and social science electives are to be selected from the approved list and need not be taken in the order listed in the curriculum. (Two courses must be 300 level or above.)

Of the 9 semester hours of technical electives shown above, one course must be chosen from approved course lists in one of the following areas: machine design/solid mechanics; thermal sciences; and automatic controls. The two remaining technical electives must be chosen from a list of design-build-test technical electives. Electives must be selected to ensure that a minimum of 16 design credits and 16 (including ECON 110) humanities and social science credits are included in the program of study. All electives are to be chosen with the advice and approval of the faculty advisor and department head.

Nuclear engineering option (NE)

Bachelor of science in mechanical engineering
135 hours required for graduation
Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

Freshman

Fall semester

CHM 210	Chemistry I	4
ENGL 100	Expository Writing I*	3
MATH 220	Analytic Geometry and Calculus I	4
SPCH 105	Public Speaking IA	2
Humanities or social science elective		3
ME 015	Mechanical Engineering Seminar	0
		16

Spring semester

CHM 230	Chemistry II	4
Humanities or social science elective		3
MATH 221	Analytic Geometry and Calculus II	4
ME 212	Engineering Graphic	2
ECON 110	Principles of Macroeconomics	3
ME 015	Mechanical Engineering Seminar	0
		16

Sophomore

Fall semester

MATH 222	Analytic Geometry and Calculus III	4
PHYS 213	Engineering Physics I	5
IMSE 241	Production Processes	3
C Programming Language Requirement		2
CHE 350	Engineering Materials	2
ME 015	Mechanical Engineering Seminar	0
		16

Spring semester

MATH 240	Elementary Differential Equations	4
PHYS 214	Engineering Physics II	5
ME 300	Introduction to ME Design	2
CE 333	Statics	3
ME 400	Computer Application in Mechanical Engineering	2
Humanities and social science elective		2
ME 015	Mechanical Engineering Seminar	0
		18

Junior

Fall semester

CE 533	Mechanics of Materials	3
EECE 519	Electric Circuits and Controls	4
ME 512	Dynamics	3
ME 513	Thermodynamics	3
NE 505	Elements of Nuclear Engineering	3
STAT 490	Introduction to Statistics and Probability I	1
STAT 491	Introduction to Statistics and Probability II	1
ME 015	Mechanical Engineering Seminar	0
		18

Spring semester

ME 570	Mechanical System Dynamics	4
NE 512	Principles of Radiation and Detection	3
ME 535	Measurement and Instrumentation Laboratory	3
ME 571	Fluid Mechanics	3
ME 533	Machine Design IA	3
NE 550	Radiation Protection Engineering	2
ME 015	Mechanical Engineering Seminar	0
		18

Senior

Fall semester

ME 523	Thermodynamics II	3
ME 573	Heat Transfer	3
NE 630	Nuclear Reactor Theory	3
NE 693	Radiation Shielding Design	2
ME 640	Automatic Controls	3
ME 574	Experimental Methods and Design Lab	3
ME 015	Mechanical Engineering Seminar	0
		17

Spring semester

Humanities or social science elective		5
ENGL 415	Written Communication for Engineers	3
ME 560	Engineering Economics	2
ME 575	Mechanical Engineering Industrial Design Project	3
NE 648	Nuclear Reactor Lab	3
ME 015	Mechanical Engineering Seminar	0
		16

The student may opt for ME 563 Machine Design II.
* Expository Writing II is optional if prerequisites for Written Communications for Engineers (ENGL 415) are met from Expository Writing I.

Humanities and social science electives are to be selected from the approved list and need not be taken in order listed in the curriculum. (Two courses must be 300 level or above.)

Note: The ME curriculum published in the last KSU Undergraduate catalog lists STAT 510 Intro to Stat. & Prob. 3 hrs., this course is to be replaced by STAT 490 and STAT 491, each 1 hr. The published curriculum states 135 hours required for graduation, but the semester totals are 136 hours. Therefore, the 135 hour requirement is correct for the curriculum with STAT 490 and 491 substituted for STAT 510, and the NE Option will have 1 hour more required for graduation.

Mechanical engineering courses

ME 015. Mechanical Engineering Seminar. (0) I, II. A monthly assembly of all undergraduates enrolled in the mechanical engineering curriculum for the purpose of exchanging information regarding academic, technical, social, ethical, and professional matters between students, faculty, and practicing professionals. One hour of lec. a month.

ME 212. Engineering Graphics. (2) I, II. Technical sketching, study of basic principles of projective geometry, multiview drawings, pictorials, reading and interpreting drawings, introduction to CAD, sectioning, dimensioning. Three hours lab and one hour rec. a week. Pr.: Plane geometry.

ME 300. Introduction to ME Design. (2) I, II. Introduction to the design process, dimensioning and tolerancing, fasteners, welds, gears, belts, chains, bearings, springs; detail and assembly drawings; interdisciplinary nature of design; design methodology; interdisciplinary design projects. Six hours lab a week. Pr.: ME 212, PHYS 213 and IMSE 241.

ME 390. Topics in Mechanical Engineering. (Var.) I, II, S. Topics selected in consultation with instructor. Intended for interdisciplinary studies or innovative studies in mechanical engineering. Pr.: Consent of instructor.

ME 400. Computer Applications in Mechanical Engineering. (2) I, II. The development and application of computer techniques to the problems of design and analysis in mechanical engineering, including computer programming. Two hours rec. a week. Pr.: MATH 221 and NE 385.

ME 499. Honors Research in Mechanical Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering honors program. A report is presented orally and in writing during the last semester.

ME 512. Dynamics. (3) I, II, S. Vector treatment of kinematics, Newton's Laws, work and energy, impulse and momentum, with applications to problems of particle and rigid body motion. Three hours rec. a week. Pr.: CE 333 and MATH 222.

ME 513. Thermodynamics I. (3) I, II, S. Properties of the pure substance. The first and second laws of thermodynamics. Three hours rec. a week. Pr.: PHYS 213; MATH 222.

ME 523. Thermodynamics II. (3) I, II. Continuation of Thermodynamics I. Gas mixtures, psychrometry, generalized thermodynamic relations and reactive systems. Three hours rec. a week. Pr.: ME 513.

ME 533. Machine Design I. (3) I, II. Displacement, velocity, and acceleration analysis of machine elements—cams, gears, and other mechanisms. A brief introduction to dynamics of machines. Three hours rec. a week. Pr.: ME 512.

ME 535. Measurement and Instrumentation Laboratory. (3) I, II. Theory and application of mechanical engineering measurements, instrumentation, and computer-based data acquisition. One hour rec. and six hours lab a week. Pr.: ME 400, 513, and EECE 519, and STAT 491.

ME 560. Engineering Economics. (2) I, II. Economic analysis of problems as applied in engineering. Two hours rec. a week. Pr.: ECON 110, junior standing in engineering.

ME 563. Machine Design II. (3) I, II. Design and analysis of machine elements, such as shafting, springs, screws, belts, brakes, clutches, gears, and bearings, with emphasis on strength, rigidity, and wear qualities. Three hours rec. a week. Pr.: CE 533 and ME 533.

ME 570. Mechanical System Dynamics. (4) I, II. Basic linear systems modeling and equation formulation techniques. Time response of low-order linear systems. Modeling of engineering systems including hydraulic, mechanical, electronic, and thermal systems. State equations and system response analysis. Three hours lec. and three hours lab per week. Pr.: MATH 240. Pr. or conc.: ME 535 and ME 571.

ME 571. Fluid Mechanics. (3) I, II, S. Physical properties; fluid statics; dynamics of ideal and real fluids (for incompressible and compressible flow); impulse and momentum; laws of similitude; dimensional analysis; flow in pipes; flow in open channels; flow about immersed objects. Three hours rec. a week. Pr.: ME 512. Pr. or conc.: ME 513.

ME 573. Heat Transfer. (3) I, II. Fundamentals of conduction, convection, and radiation; principles of heat exchanger design and dimensional analysis. Three hours rec. a week. Pr.: ME 571, MATH 240.

ME 574. Experimental Methods and Design Laboratory. (3) I, II. Application of theory, design principles and experimental methods to a complete design project involving design, analysis, fabrication and testing. One hour rec. and six hours lab per week. Pr.: ME 300, ME 535, ME 571; corequisite.: ME 573.

ME 575. Mechanical Engineering Industrial Design Projects. (3) I, II. Application of the principles of the design process in the solution of engineering industrial-type problems with direct involvement of industry. Six hours lab a week. Pr. or conc.: ME 573, 574 and 563.

ME 610. Finite Element and Finite Difference Applications in Mechanical Engineering. (3) I. The application of finite element and finite difference methods to the solution of engineering problems. Topics include introductions to the methods, linear elastic stress analysis, thermal analysis, flow analysis, and modeling limitations and errors. Commercial computer codes are used in the applications. Pr.: CE 533, ME 571, ME 523, ME 400. Co-req: ME 573.

ME 620. Internal Combustion Engines. (3) I. Analysis of cycles, design, and performance characteristics. Three hours rec. a week. Pr.: ME 523.

ME 622. Environmental Engineering I. (3) II. Psychrometry; heating-cooling system design; refrigeration basics. Three hours rec. a week. Pr. or conc.: ME 573.

ME 628. Aerodynamics. (3) I. A general introduction to aerodynamics including the analysis of lift, drag, thrust, and aircraft performance for subsonic aircraft. Three hours rec. a week. Pr.: ME 571 and MATH 240.

ME 631. Aircraft and Missile Propulsion. (3) II. Mechanics and thermodynamics of aircraft and missile propulsion systems; combustion; air-breathing jet engines; rockets; applied compressible flow; propellants; performance and design of propulsion systems. Three hours rec. a week. Pr.: ME 523, 571, and MATH 240.

ME 633. Thermodynamics of Modern Power Cycles. (3) I. The first and second law analysis of modern steam cycles for both fossil-fuel and nuclear-fuel installations. Cycle efficiency and factors affecting performance, such as cycle design, load factor, and auxiliaries. Thermal pollution resulting from steam cycles. Three hours rec. a week. Pr.: ME 513.

ME 635. Dynamics of Flight—Stability and Control. (3) II. Development of the general dynamic equations of motion for six-degree-of-freedom aircraft. Aerodynamic and propulsion force and moment models, linear and flat earth approximations, static and dyanamic stability, and control analysis. Longitudinal and lateral normal modes, stability augmentation and automatic control design and simulation. Pr. or conc.: ME 640.

ME 640. Automatic Controls. (3) I, II. Functional description of dynamic systems, analysis and design of feedback systems. Basic controllers, sensitivity, stability, and error analysis. Transient and steady-state response, compensation techniques. Design of controllers using root locus and frequency response methods. Introduction to discrete-time systems. Two hours lec. and three hours lab a week. Pr.: ME 570.

ME 650. Introduction to Computer-Aided Design. (3) I. Scope of computer-aided design, computer-aided design workstations, interactive programming, numerical methods and computer graphics in computer-aided design, applications to design problems, introduction to finite elements, and optimal design. Pr.: ME 400 and senior standing in engineering.

ME 651. Introduction to Composites. (3) I, II. The analysis and behavior of a laminate. Design, fabrication, and testing of elements made of various composite materials. Two hours rec. and three hours lab a week. Pr.: CE 533 and senior standing in engineering.

ME 656. Machine Vibrations I. (3) I, II. A general consideration of free and forced vibration in machines for various degrees of freedom; critical speed; vibration isolation. Three hours rec. a week. Pr.: ME 512 and MATH 240.

ME 670. Computer Control of Mechanical Systems. (3) II. Computer control of mechanical systems, including thermal and fluid as well as electro-mechanical, discrete modeling, and analysis of dynamic physical systems. Sampling and data conversion and reconstruction. Stability and performance specifications. Real time implementation. Digital controller design and implementation. Laboratory exercises in control applications and design. Two hours rec. and three hours lab per week. Pr.: ME 640.

ME 699. Problems in Mechanical Engineering. (Var.) I, II, S. Pr.: Approval of department head.

ME 716. Intermediate Dynamics. (3) II. General vector principles of the dynamics of particles and rigid bodies; applications to orbital calculations, gyrodynamics, and rocket performance; introduction to the energy methods of advanced dynamics. Three hours rec. a week. Pr.: ME 512 and MATH 240.

ME 720. Intermediate Fluid Mechanics. (3) I. A continuation of ME 571 in the study of general topics in fluid mechanics including viscous flow, compressible flow, turbulence, and boundary layer theory. Numerous applications utilizing computational fluid dynamics. Three hours rec. a week. Pr.: ME 571, MATH 240.

ME 721. Thermal Systems Design. (3) I. Thermal systems design including economics, simulation, and optimization. Includes heating, ventilating, and air conditioning (HVAC) design and control. Pr.: ME 573.

ME 722. Environmental Engineering II. (3) I, in even years. Characteristics of air conditioning compressors, condensers, evaporators; system characteristics; air conditioning system controls; refrigeration systems; acoustics. Three hours rec. a week. Pr.: ME 622.

ME 730. Control Systems Analysis and Design. (3) II. Use of classical analysis techniques for control system compensation. State space-control theory fundamentals are presented in addition to an introductory treatment of several major systems areas. Pr.: EECE 530 or ME 640. Same as EECE 730.

ME 732. Robotic System Analysis. (3) I, in even years. Modeling and static position and dynamic motion of a serial link manipulator. Forward and inverse kinematics, differential motion, path description and generation, dynamic and static forces, dynamic formulations, and feedback control of joint actuators. Project work includes robot computer software development and lab exercises. Pr.: ME 512. Pr. or conc.: ME 640.

ME 735. Geometric Modeling. (3) II, in even years. Geometric aspects of computer graphics. Two- and three-dimensional homogeneous transformations; hidden line and surface removal; space curves and surfaces, including Bezier and B-spline methods; solid modeling; applications and current topics. Same as CIS 735. Pr.: ME 650 or CIS 636 or EECE 636.

ME 736. Applied Elasticity. (3) I. Analysis of stress and strain at a point in an elastic medium; two-dimensional problems in rectangular and polar coordinates; torsion of bars; energy principles; numerical methods. Three hours rec. a week. Pr.: CE 533.

ME 738. Experimental Stress Analysis. (3) II, in odd years. Experimental methods of investigating stress distributions. Photoelastic models, photoelastic coatings, brittle coatings, and resistance strain gauges applied to static and dynamic problems. Two hours rec. and three hours lab a week. Pr. or conc.: CE 533.

ME 756. Machine Vibrations II. (3) I, on demand. Advanced consideration of systems having free and forced vibrations, with particular reference to several degrees of freedom, distributed mass, generalized coordinates, and non-linear forms. Three hours rec. a week. Pr.: ME 656.

ME 757. Kinematics. (3) I, in odd years. Geometry of constrained motion applied to point paths, specific input-output relations, function generators, kinematic synthesis. Three hours rec. a week. Pr.: ME 533.

ME 760. Engineering Analysis I. (3) I. Methods of analysis employed in the solution of problems selected from various branches of engineering. Emphasis is on discrete systems. Three hours rec. a week. Pr.: MATH 240 and senior standing.

ME 773. Intermediate Heat Transfer. (3) II. Conduction, convection, and radiation, mass transfer, phase change, heat exchangers, introductory numerical methods. Three hours rec. a week. Pr.: ME 573.

ME 775. Optimal Mechanical Design. (3) II, in odd years. The philosophy of optimal design; unconstrained minimization for single variable and multivariable cases; linear and quadratic programming; constrained nonlinear optimization; applications to design of structures, mechanisms, dynamic systems, components, control systems, etc. Pr.: ME 400, MATH 240, and senior standing in engineering.

Nuclear engineering courses

NE 385. Engineering Computational Techniques. (2) I, II. Application of digital computer methods to the solution of engineering problems. Two hours lec. a week. Pr.: MATH 220.

NE 415. Introduction to Engineering Analysis. (3) I. Introduction to analytical, statistical, and numerical analysis, including computer programming, as applied to engineering. Three hours rec. a week. Pr.: MATH 211 or 221.

NE 500. Applied Engineering Analysis. (3) II. Methods and applications of analytical, statistical, and numerical analysis in engineering, including computer programming. Three hours rec. a week. Pr.: NE 415.

NE 505. Elements of Nuclear Engineering. (3) I. Introduction to radioactive decay, neutron reactions and interactions, radiation interaction with matter, and reactor physics. Three hours lec. a week. Pr.: MATH 221 and PHYS 213.

NE 512. Principles of Radiation Detection. (3) II. Operating principles and general properties of devices used in the detection and characterization of ionizing radiation. Two hours rec. and three hours lab a week. Pr.: NE 505.

NE 520. Neutron and Particle Interactions I. (2) II. Neutron interactions and associated cross sections of importance to nuclear reactor theory; fission and its application to reactor design; energetics of multiple neutron scattering and neutron thermalization. Two hours rec. a week. Pr.: NE 505.

NE 550. Radiation Protection Engineering. (2) II. Basic principles and concepts of radiation protection. Analysis of radioactive-decay systematics, dose and risk concepts, description of natural and other sources of ionizing radiation, basic procedures of external and internal dose evaluation, waste storage and disposal. Two hours rec. a week. Pr.: MATH 240, ME 400, NE 505. Pr. or conc.: NE 512.

NE 620. Problems in Nuclear Engineering. (Var.) I, II, S. Specific studies in current and advanced problems in various phases of nuclear engineering. Pr.: Consult head of department.

NE 630. Nuclear Reactor Theory. (3) I. Theory of neutron diffusion and thermalization with application to steady-state nuclear reactors. Three hours rec. a week. Pr.: MATH 240, NE 505.

NE 648. Nuclear Reactor Laboratory. (3) I, II. Licensing, nuclear safety, and reactor operations. Measurement of neutronic, thermal-hydraulic, and health physics parameters. Two hours lec. and three hours lab per week. Pr.: NE 505, ME 513. Pr. or conc.: ME 573.

NE 693. Radiation Shielding Design. (3) I. Sources of radiation, kernel concepts, and application of diffusion and ray theory to shielding calculations and design, with applications principally in stationary nuclear reactor shielding. Three hours rec. a week. Pr.: NE 602. Pr. or conc.: NE 630.

NE 750. Direct Energy Conversion. (3) II. Principles and analysis of direct conversion phenomena, with special emphasis on direct conversion of nuclear energy including thermoelectric, thermoionic, photovoltaic, magneto-hydrodynamic, and electrochemical processes. Three hours rec. a week. Pr.: NE 647.

NE 761. Radiation Measurement Systems. (3) I. Principles of systems used to measure radiation. Applications to radiation monitoring, dosimetry, and spectroscopy. Three hours rec. a week. Pr.: NE 512.

NE 799. Special Topics in Nuclear Engineering. (Var.) On sufficient demand. Topical material of importance in nuclear engineering, such as controlled thermonuclear reactions, numerical analysis, Monte Carlo methods in radiation transport, effects of nuclear explosions, etc. Pr.: Consent of head of department.

Human Ecology

Carol E. Kellett, Dean
Virginia M. Moxley, Associate Dean for Academic Affairs
Jean Sego, Assistant Dean for Academic Programs and Records
Karen Pence, Assistant Dean for Advising and New Student Programs

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The mission of the College of Human Ecology is to discover, disseminate, and apply knowledge to meet basic human needs and to improve the human condition. This knowledge advances professions, public policy, human services, business, and industry. In a world focused on things, this college focuses first on people.

Professional programs are offered through General Human Ecology, the School of Family Studies and Human Services, and the Departments of Clothing, Textiles and Interior Design; Foods and Nutrition; and Hotel, Restaurant, Institution Management and Dietetics.

Degree Programs

All undergraduate programs of study lead to a bachelor of science degree. The programs are listed in the table and described on the following pages.

Entering freshmen who are undecided about specific programs may be admitted to the major in general human ecology (HEGN). Entering transfer students who are undecided and nondegree seeking students should seek admission in human ecology, undeclared (HEUN).

General Requirements

Bachelor of science degree

Each degree offered by the College of Human Ecology provides graduates with a foundation for professional practice and life long learning. Graduates from all degree programs in the college will be able to:

- Understand the interaction of people with their environments.
- Understand roles and dynamics within family and other human systems.
- Recognize and value diversity throughout the human experience.
- Access, analyze, and interpret data to make informed decisions.
- Articulate informed points of view on issues that affect individuals, families, and professional practice.
- Apply professional knowledge to improve the lives of people.
- Demonstrate standards of ethical conduct.
- Assume the responsibilities of citizenship.

Basic curriculum requirements are listed below. See specific program descriptions for details.

General studies (39 hours minimum)		
Communications (8–9)		
ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
Quantitative studies (6)		
MATH 100	College Algebra	3
	or	
A college-level calculus course		3
Statistics course		3
Social science (6)		
(To include course work in economic systems and human behavior.)		
Humanities (6)		
Electives*		6
Natural/sciences (7)		
(To include course work in life science and physical science; one course with a laboratory.)		
Additional integrative studies courses		**6**
GNHE 310	Human Needs	3
	or	
FSHS 350	Family Relationships and Gender Roles	3
University general education elective		3
Professional studies (36 or more hours)		
(See specific option/program.)		
Unrestricted electives		
(See specific option/program.)		
Total hours for graduation		**120 or more**

*A listing of categories of courses applicable toward the general studies requirements for human ecology programs is available from the college dean's office.

University general education

All students must meet university general education requirements of 18 credits in approved general education courses, 6 of which are upper-division credits.

To ensure breadth in the general education experience, each College of Human Ecology student must complete at least one approved university general education course in four of the following areas:

- Quantitative studies
- Economics
- Social sciences
- Humanities
- Life sciences
- Physical sciences
- A course from a professional college

No course offered by the department/school in which a student is majoring can be applied to meet that student's university general education requirements.

Students should consult with their academic advisors to assure that their choices of approved university general education courses meet the required distribution.

In course descriptions, general education courses are marked with a ◆. The Degrees section at the front of this catalog lists other university general education courses. A list of currently offered university general education courses is available on the web at these addresses:

- http://www.ksu.edu/course/
- http://www.ksu.edu/educadv/

Policy for transfer students
Students entering Kansas State University and transferring credit from accredited two-year or four-year institutions are required to complete a minimum number of university general education* credit hours at Kansas State University. The minimum number of university general education credit hours required is based upon total number of completed transfer credit hours accepted at K-State on initial date of entry.

Number of completed transfer credit hours accepted at K-State on initial date of entry	Minimum university general education credit hours to be taken at K-State
0–14	18
15–29	15
30–44	12
45–59	9
60 and above	6

Each transfer student is required to complete a minimum of 6 credit hours of K-State upper-division university general education courses (300 and above) as specified in the program in which they will graduate.

Grade requirement

Grades of C or higher are required in all professional studies and supporting courses in College of Human Ecology degree programs.

Transfer programs

Careful planning enables students to transfer courses from another college or university that will apply toward specific degree requirements at K-State. Students who plan to transfer should contact the College of Human Ecology Dean's Office as soon as possible to verify the transferability of courses and plan their transfer programs. Two-plus-two articulated programs are available for selected programs at some Kansas community colleges.

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*The Kansas Board of Regents defines basic skills courses separate from general education. Kansas State University defines basic skills as expository writing (6 hrs.), public speaking (2 hrs.), physical education (1 hr.), and mathematics (college algebra or higher, 3 hrs.). K-State will award transfer credit for these courses.

Information about the transferability to Kansas State University of specific courses offered by most Kansas higher education institutions is available on the World Wide Web under the heading Kansas State University Transfer Equivalency Information. This information can be accessed at *http://www.ksu.edu/admit/tran.html* on the World Wide Web.

Program Options

Honors programs

Students with outstanding academic records are invited to participate in the human ecology honors program. High school students are selected according to their scores on the American College Test. Transfer and continuing K-State students with a 3.5 cumulative grade point average also are eligible. Advisors help honor students plan individual programs of study, which include honors courses and independent study.

In the junior or senior year, students complete honors projects on topics of their choice. They develop these projects with human ecology faculty advisors and with the approval of the human ecology honors program coordinator. This independent study may involve extensive reading in a selected area, field study, experience with a research project, or participation in an academic activity that will significantly increase the student's knowledge in an area of interest.

Dual degree programs

Kansas State University

Students interested in combining two degree programs must satisfy all requirements for both degrees. Students may earn dual degrees within the College of Human Ecology, or they may combine their degree in human ecology with a degree from a different college. Contact the dean's office for more information.

Secondary majors

The College of Human Ecology participates in the interdisciplinary programs in American ethnic studies, international studies, Latin American studies, women's studies, and gerontology, described in the Secondary Majors section of this catalog.

Students in public health nutrition are required to complete a secondary major. See the Foods and Nutrition section of this catalog for program requirements.

Programs	Degrees	School/departments/areas
Apparel marketing and design	Bachelor of science in clothing and textiles	Clothing, textiles, and interior design
Communication sciences and disorders	Bachelor of science in family studies and human services	Family studies and human services
Dietetics Coordinated program in dietetics General dietetics	Bachelor of science in dietetics	Hotel, restaurant, institution management and dietetics
Early childhood education	Bachelor of science in family studies and human services	Family studies and human services
Family and consumer sciences education teacher certification	Bachelor of science in human ecology	General human ecology
Family studies and human services Family and consumer economics (with family financial planning emphasis) Family life and community services Life span human development Family studies and human services and social work†	Bachelor of science family studies and human services	Family studies and human services
Food science	Bachelor of science in foods and nutrition	Foods and nutrition
General human ecology	Bachelor of science in human ecology	General human ecology
Hotel and restaurant management	Bachelor of science in hotel and restaurant management	Hotel, restaurant, institution management and dietetics
Human ecology and mass communications	Bachelor of science in human ecology and mass communications	General human ecology
Interior design	Bachelor of science in interior design	Clothing, textiles, and interior design
Nutrition and exercise sciences†	Bachelor of science in foods and nutrition	Foods and nutrition
Nutritional sciences (pre-medical, pre-dental, and medically related fields)	Bachelor of science in foods and nutrition	Foods and nutrition
Public health nutrition	Bachelor of science in foods and nutrition	Foods and nutrition
Textiles	Bachelor of science in clothing and textiles	Clothing, textiles, and interior design

†The dual degree is awarded through the College of Arts and Sciences.

Minors

The College of Human Ecology offers the following minors:

- Clothing and textiles
- Communication sciences and disorders

Students may choose minors to complement their human ecology programs. Minors can be completed using unrestricted electives and other nonspecific degree requirements. For more information, see the minors section of this catalog and consult an academic advisor and the director of the specific minor program.

Students complete the academic requirements for a business minor concurrently with completion of the apparel and textile marketing and hotel and restaurant management programs offered through the College of Human Ecology.

Students should contact the minor program director upon completion of the requirements for a minor to request that the Registrar's Office record the minor on the transcript when the bachelor of science degree is completed.

Manhattan Christian College

The College of Human Ecology cooperates with Manhattan Christian College to provide dual degrees. Students may supplement their Christian service or other programs with a College of Human Ecology professional program. Those interested in dual degrees should contact the College of Human Ecology Dean's Office and Manhattan Christian College, Office of the Vice President for Academic Affairs. Joint advising is arranged for dual degree students. With careful planning during the first semester, most students can complete two degrees in five years, including study during the summers.

Placement

The College of Human Ecology cooperates with Career and Employment Services to help students locate internships, co-op education, part-time work, and professional employment in their chosen fields.

Field study and cooperative education opportunities

Each department in the college offers field study experience for interested and qualified students. Students earn university credit while gaining pre-professional experience. University faculty and professionals in the field guide and supervise these experiences. The length of time devoted to a field study experience varies from one or two weeks to a complete semester. Some field experience programs provide students with financial compensation.

Organizations and activities

Students participate in a wide range of professional activities sponsored by local and national organizations. Most subject areas within the college have a student organization to enhance the personal and professional development of members. Student associations include:

American Association of Textile Chemists and Colorists
American Society of Interior Designers
Apparel and Textile Marketing Association
Apparel Design Collective
Family and Consumer Economics Association
Family and Consumer Sciences Association
Family Studies and Human Services Association
Foods and Nutrition Professional Association
Hospitality Management Society
Kansas State Student Speech, Hearing, and Language Association
Student Dietetic Association

Undergraduate students may be elected to the Human Ecology College Council, the official college student governing body. All students may participate in the College of Human Ecology Open House, which is held as a part of All-University Open House.

The College of Human Ecology Ambassadors are a select group of students who serve as hosts for the college and promote college programs.

Qualified students are invited to join the Phi Upsilon Omicron, Kappa Omicron Nu, and Eta Sigma Delta honor societies.

Family Center

Stephan Bollman, Director

The Family Center provides applied educational experiences for graduate and undergraduate students in the School of Family Studies and Human Services.

The center offers educational programs, consultation, and therapy for individuals and families. These services, provided by students who are supervised by School of Family Studies and Human Services faculty, are available to students and the general public. Specific programs address family topics, including working with parents, parent education, and family life.

Located north of Justin Hall on Campus Creek Road, the center is easily accessible to the students, faculty, and community.

Galichia Institute for Gerontology and Family Studies

Carolyn S. Wilken, Director

The Galichia Institute for Gerontology and Family Studies provides a physical and programmatic link between the Early Childhood Laboratory and the Family Center. This facility provides for research and educational programs in intergenerational studies. Workshops, seminars, and research studies explore the needs and the potential of the aging population.

The Sensory Analysis Center

Delores Chambers, Manager

The Sensory Analysis Center in the Department of Foods and Nutrition has the only university-operated professional sensory panel in the United States. Sensory properties of products are analyzed for companies, government entities, and researchers on campus to provide information about characteristics that are important in product development. The Sensory Analysis Center helps students link theory with practical experience in the study of sensory perception and evaluation of products.

Clothing, Textiles, and Interior Design

Mitchell D. Strauss, Head

Professors McCullough,* Gatewood,* Stowe, Strauss,* and White;* Associate Professors Huck,* Munson,* and Ramaswamy;* Assistant Professors Bode,* Brazil,* Cushman,* Hubbell, Lamb,* Lehew, and Villasi;* Instructor Cannon; Emeriti: Professors Brockman,* Slinkman, and Tucker; Associate Professors Hill,* J. Howe, and Peterson; Assistant Professors Annis, Craigie* and Newby.

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http://www.ksu.edu/humec/ctid.htm

The Department of Clothing, Textiles, and Interior Design focuses on meeting human needs through the analysis, design, production, and evaluation of components in the near environment.

Programs leading to a bachelor of science degree are: apparel marketing and design with specializations in apparel marketing and in apparel design and production; interior design; and textiles. Students are encouraged to participate in field experiences and internships to further understand their chosen professions.

It is also possible, through the department, to earn a minor in clothing and textiles. Courses in the minor will give the student a background in textile science and knowledge of the industry and careers.

Facilities include well-equipped studios and laboratories for interior design, housing, apparel design and production, and textile analysis. An extensive historic textiles and costume collection, housed in a climate-controlled storage facility in Justin Hall, is available for study. A new universal design facility provides opportunities for students to see design improvements for people with special needs.

Students in all programs participate in field trips and study tours to design, production, and retail market centers across the U.S. and internationally. Student chapters of two professional organizations, the American Society of Interior Designers (ASID) and the American Association of Textile Chemists and Colorists (AATCC), offer opportunities for leadership and involvement.

Apparel marketing and design

Bachelor of science in clothing and textiles

The goals of the apparel marketing and design program are to prepare graduates for professional careers in apparel design, apparel manufacturing, and the retailing industry; to develop individuals with creative thinking abilities; and to develop competent resourceful business leaders who have a liberal and general education and a thorough understanding of the apparel marketing field. The program provides detailed practical experience and a solid base for graduate studies.

Course work for all majors includes a foundation in liberal and general studies, including written and oral communications, mathematics, and computer science; textile and apparel evaluation; social, cultural, historical, and psychological aspects of apparel; apparel design, production, and marketing; and analysis of textile, apparel, and retailing industries.

After completion of the core courses, students specialize in higher level course work in either apparel design and production or apparel marketing.

General studies courses (45–48 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
MATH 100	College Algebra	3
	or	
MATH 220	Analytical Geometry and Calculus I	4
STAT 350	Business and Economic Statistics	3
CIS 101	Introduction to Information Technology	1
CIS 102	Introduction to Microcomputer Spreadsheet Applications	1
CIS 104	Introduction to Microcomputer Word Processing Applications	1
ECON 110	Principles of Macroeconomics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
HIST	History elective	3
Humanities elective		3
Biological science elective		3–4
CHM 110	General Chemistry	3
	and	
CHM 111	General Chemistry Lab	1
	or	
CHM 210	Chemistry I	4
GNHE 310	Human Needs	3
	or	
FSHS 350	Family Relationships and Gender Roles	3
University general education elective		3

Professional studies (63–70 hours)
(Includes core and supporting courses and choice of a specialization in apparel design and production or apparel marketing)

Clothing and textiles core courses (17 hours)

CT 150	Introduction to Professions in the Apparel and Textile Industry	1
CT 265	Textiles	2
CT 266	Textiles Lab	1
CT 330	Clothing and Society	3
CT 360	Intermediate Textiles	3
CT 440	Fundamentals of Apparel Evaluation	3
CT 545	Textile and Apparel Industry	3
CT 650	Clothing and Textile Study Tour	1

Supporting courses (10 hours)

CT 200	Apparel Design/Production I	4
CT 230	Apparel and Textile Marketing	3
CT 630	History of Costume	3

Specialization in apparel design and production (24–25 hours)

CT 300	Apparel Design/Production II	4
CT 400	Apparel Design/Production III	4
CT 610	Computer-Aided Apparel Design	3
CT 660	Apparel Design/Production IV	4
CT 690	Apparel Design/Production V	4
CT 550	Apparel Design/Production Field Experience	5
	or	
	CT Electives	6

Supporting emphasis in apparel design or production (13–15 hours)

Apparel design:		
ART 100	Design I	3
ART 190	Drawing I	3
ART 195	Survey of Art History I	3
ART 200	Design II	3
CT 715	Advanced Apparel Design	3
	or	
Apparel production:		
CT 620	Yarns and Fabrics	3
CT 680	Physical Analysis of Textiles	4
MANGT 300	Introduction to Total Quality Management	3
PSYCH 560	Industrial Psychology	3

Specialization in apparel marketing (24–25 hours)

CT 435	Apparel and Textile Promotion	4
CT 450	Apparel and Textile Marketing Field Experience	5
	or	
MKTG 541	Retailing	3
	and	
MKTG 542	Sales Management	3
CT 520	Apparel and Textile Profit Analysis	3
CT 536	Merchandising Concepts	4
CT 635	Case Studies in Apparel and Textile Marketing	2
MANGT 531	Personnel and Human Resources Management	3
	or	
PSYCH 560	Industrial Psychology	3
MC 320	Principles of Advertising	3
	or	
MC 325	Fundamentals of Public Relations	3

Supporting emphasis in business (18 hours)

ACCTG 231	Accounting for Business Operations	3
ACCTG 241	Accounting for Investing and Financing	3
ECON 120	Principles of Microeconomics	3
FINAN 450	Introduction to Finance	3
MANGT 420	Management Concepts	3
MKTG 400	Marketing	3

Unrestricted electives	**7–16**
Total for graduation	**125**

Interior design

Bachelor of science in interior design

The interior design program is a four-year, professional curriculum accredited by the Foundation for Interior Design Education Research (FIDER). It provides the competencies required to meet the qualifications for the professional title of interior designer.

Interior designers identify, research, and creatively solve problems related to the function of interior environments in order to enhance quality of life and protect public health, safety, and welfare. Interior designers perform services such as programming, design analysis, space planning, preparing drawings and documents, and jobsite inspection using specialized knowledge of aesthetics, furnishings, interior construction, building systems and components, building regulations, equipment, and materials.

The interior design program emphasizes the interaction between humans and their near environment, that is, the design of interior spaces that enhance user satisfaction, productivity, and safety at all stages of the life cycle. Specializations within the program include design for special needs, interior finishes and furnishings, contract documents, interior design history, and preservation and restoration.

Entering students participate in joint first-year courses with students in the College of Architecture and Design.

Students are provided with the creative, aesthetic, and technical skills necessary to translate a design concept into three-dimensional reality. Students develop competencies in problem-solving, interior space planning, selection and specification of interior furnishings and finishes, effective graphic and verbal presentation skills, and execution of contract documents.

Students are required to successfully complete a portfolio review of their accumulated design work. The review normally occurs prior to March 1 of the second year of study and must be passed prior to enrollment in IDH 425, Space and Activity Planning II.

Supervised internships and study tours in the United States and abroad, and participation in the student chapter of the American Society of Interior Designers, enhance the program.

General studies (42–43 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
ECON 110	Principles of Macroeconomics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
ART 196	Survey of Art History II	3
HIST 101	Western Civilization: Rise of Europe	3
Life science elective		3

PHYS 101	The Physical World I	3
	and	
PHYS 103	The Physical World I Lab	1
	or	
PHYS 115	Descriptive Physics	4
MATH 100	College Algebra	3
	or	
A college-level calculus course		3
A statistics course		3

Additional integrative studies courses (6 hours)

GNHE 310	Human Needs	3
	or	
FSHS 350	Family Relationships and Gender Roles	3
University general education elective (300 or above)		3

Professional studies (58–60 hours)

CT 260	Textiles for Interiors	3
DSFN 201	Environmental Design Studio I	4
DSFN 202	Environmental Design Studio II	4
DSFN 203	Survey of the Design Professions	1
IDH 210	Design and Behavior in the Interior Environment	3
IDH 310	Construction Methods and Materials for Interior Design	3
IDH 315	Advanced Interior Design Graphics	3
IDH 320	History of Interior Design I	3
IDH 345	Space and Activity Planning	3
IDH 360	History of Interior Design II	3
IDH 410	Housing and Its Environment	3
IDH 415	Computer-Aided Design and Drafting for Interior Design	2
	or	
PLAN 630	Computer Applications in Planning and Design	1–3
IDH 425	Space and Activity Planning II	3
IDH 435	Interior Design and Housing Systems	3
IDH 445	Interior Design Contract Documents Studio	3
IDH 530	Interior Design Practices and Procedures	3
IDH 545	Senior Interior Design Studio I	3
IDH 645	Senior Interior Design Studio II	3
IDH 650	Advanced Design and Behavior in the Interior Environment	3
IDH 651	Designing Supportive Environments	3

Professional electives (18 hours)

Select from lists below

Studio arts	6
Professional applications	6
Business	6

Studio arts (6 hours)

ART 205	Graphic Design Techniques	3
ART 220	Watercolor I	3
ART 230	Sculpture I	3
ART 245	Painting I	3
ART 265	Ceramics I	3
ART 270	Metalsmithing and Jewelry	3

Professional applications (6 hours)

IDH 599	Interior Design and Housing Internship	4
IDH 660	Kitchen and Utility Area Planning	3
IDH 680	Historic Fabric Design	3
IDH 710	Housing and Facilities Management Processes/Applications	3
IDH 725	Community Housing Needs Assessment	3
IDH 760	Historic Preservation and Restoration of Interiors	3
ARCH 301	Appreciation of Architecture	3
GERON 315	Introduction to Gerontology	3
THTRE 579	Fundamentals of Stage Lighting	3

Business (6 hours)

ACCTG 231	Accounting for Business Operations	3
AGEC 202	Small Business Operations	3
FINAN 552	Real Estate	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MC 325	Fundamentals of Public Relations	3
MKTG 400	Marketing	3
PSYCH 563	Gender Issues in the Work Place	3

Unrestricted electives	**4–7**
Total for graduation	**125**

Textiles

Bachelor of science in clothing and textiles

Students in the textiles program emphasize either textile science or textile chemistry by choosing the appropriate professional and supporting courses. The textile science emphasis is for students interested in the consumer aspects of the textile industry and includes quality control, fiber and fabric development, and textile testing. The textile chemistry emphasis incorporates course requirements for traditional chemistry majors, while providing students with a specialization in an applied field. Textile chemistry leads to careers in research and development with the textile industry.

General studies courses (46–50 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
ECON 110	Principles of Macroeconomics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
Humanities elective		6
Life science elective		3–4
CHM 210	Chemistry I*	4
	or	
CHM 220	Chemical Principles I	5
MATH 100	College Algebra	3
	or	
MATH 220	Analytical Geometry and Calculus I**	4
STAT 320	Elements of Statistics	3
CIS 101	Introduction to Information Technology	1
CIS 102	Information Technology: Spreadsheet Applications	1
CIS 103	Information Technology: Database Applications	1
CIS 104	Information Technology: Word Processing Applications	1

Additional integrative studies course (6 hours)

GNHE 310	Human Needs	3
	or	
FSHS 350	Family Relationships and Gender Roles	3
University general education elective		3

*Required for textile science option
**Required for supporting courses in textile chemistry

Professional and supporting courses (56–64 hours)

Clothing and textiles core courses (14–16 hours)

CT 150	Introduction to Professions in Apparel and Textile Industry	1
CT 265	Textiles	2
CT 266	Textiles Lab	1
CT 330	Clothing and Society	3
CT 440	Apparel and Textile Product Evaluation	3
CT 545	Textile and Apparel Industry	3
CT 650	Clothing and Textile Study Tour	1–2
	or	
CT 580	Internship in Textiles	3

Specialization courses in textiles (20 hours)

CT 620	Textile Yarns and Fabrics	3
CT 642	Textile Fibers	3
CT 680	Physical Analysis of Textiles	4
CT 746	Textile Dyeing and Printing	4
CT 747	Textile Finishes	3
CT 765	Chemical and Optical Analysis of Textiles	3

Supporting courses (22–28 hours)

Select Option I or II

Option I: textile science (22 hours)

CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Lab	2
ECON 120	Principles of Microeconomics	3
PHYS 115	Descriptive Physics	4
Two courses from the College of Business Administration		6

Option II: textile chemistry (25–28 hours)

CHM 230	Chemistry II	4
	and	
CHM 371	Chemical Analysis	4
	or	
CHM 250	Chemical Principles II	5
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Lab	2
CHM 550	Organic Chemistry II	3
CHM 566	Instrumental Methods of Analysis	3
CHM 567	Instrumental Methods of Analysis Lab	1
MATH 221	Analytical Geometry and Calculus II	1
PHYS 113	General Physics I	4
	or	
PHYS 115	Descriptive Physics I	4

Unrestricted electives	**11–23**
Total for graduation	**125**

Optional: Additional courses for a minor in chemistry

CHM 500	General Physical Chemistry	3
PHYS 114	General Physics II	4

Clothing and textiles minor

CT 150	Introduction to Professions in Apparel and Textile Industry	1
CT 265	Textiles	2
CT 266	Textiles Lab	1
CT 360	Intermediate Textiles	3
CT 440	Apparel and Textile Product Evaluation	3
CT 545	Textile and Apparel Industry	3

Choose one of the following:

CT 330	Clothing and Society	3
CT 630	History of Costume to 1780	3
IDH 680	Historic Fabric Design	3

Clothing and textiles courses

CT 150. Introduction to Professions in the Apparel and Textile Industry. (1) I. A survey of career opportunities in the apparel and textile industry. Discussion of the career search process and skills and experiences needed for a professional position in the field.

CT 200. Apparel Design and Production I. (4) I. Application of the elements and principles of design to apparel design; introduction to apparel production; basic fashion rendering; apparel production terminology. Three hours lec. and two hours rec. a week.

CT 230. Apparel and Textile Marketing. (3) II. Overview of the processes involved in the production and marketing of fashion goods.

CT 260. Textiles for Interiors. (3) II. Fundamentals of textiles as related to the design of residential and non-residential interiors. Two hours rec. and two hours lab per week. Pr.: Sophomore standing.

CT 265. Textiles. (2) I. Fundamentals of textiles as related to the production, sale, and use of apparel and other products. Conc. enrollment in CT 266.

CT 266. Textiles Lab. (1) I. Laboratory experiences related to the identification of fibers, yarns, and fabrics and to the care and performance of textile products. Conc. enrollment in CT 265.

CT 300. Apparel Design and Production II. (4) I. Fundamentals of apparel production; garment sizing and fit; introduction to pattern drafting, pattern manipulation, and draping. Two hours lec. and six hours of lab a week. Pr.: CT 265 and CT 266 or conc.

CT 330. Clothing and Society. (3) I. Cultural, social, psychological, and economic aspects of clothing needs and practices of individuals and groups. Three hours lec. Pr.: SOCIO 211 or PSYCH 110.

CT 360. Intermediate Textiles. (3) I. Understanding of textile fibers, dyes, and finishes; color theory and colorimetry; methods of testing, standards, and performance specifications. Pr.: CT 265, CT 266, and CHM 110.

CT 400. Apparel Design and Production III. (4) II. Advanced apparel production; intermediate pattern drafting, pattern manipulation, and draping; introduction to grading of apparel; apparel line development and merchandising. Two hours lec. and six hours lab a week. Pr.: CT 300.

CT 435. Apparel and Textile Promotion. (4) II. Promotion of apparel and textile products including advertising, display, special events, and public relations. Pr.: CT 230 and MC 320 or 325.

CT 440. Fundamentals of Apparel Evaluation. (3) II. Identification of textile product features; evaluation of quality in ready-to-wear apparel; evaluation of the interrelationships of performance, quality, and cost in textile products; specification development; standards relating to textile products. Three hours of lec. per week. Pr.: CT 360.

CT 450. Apparel and Textile Marketing Field Experience. (5) I. Supervised work experience in the apparel and textile industry. Pr.: CT 230; ACCTG 231; junior or senior in CT option, 2.5 cumulative GPA, and 2.5 GPA in professional courses.

CT 499. Problems in Clothing and Textiles. (Var.) I, II, S. Independent study. Pr.: Consent of instructor.

CT 520. Apparel and Textile Profit Analysis. (3) II, S. Concepts, practices, and procedures for analyzing textile merchandise profit including the development of user skills in the application of various software packages for data analyses and decision making in apparel and textile marketing. Pr.: ACCTG 231; CIS 102; and MKTG 400 or conc. enrollment.

CT 536. Merchandising Concepts. (4) I. Analysis of the elements, processes, and controls involved in fashion merchandising. Pr.: CT 230 and junior or senior standing.

CT 545. Apparel and Textile Industry. (3) I. Analysis of fiber, textile, and apparel production; industry structure; impact of government regulations on production. Pr.: ECON 110.

CT 550. Apparel Design Field Experience. (3–12) II, S. Preplanned and supervised off-campus work experience in the apparel industry. Pr.: CT 300 and 640; junior or senior standing in apparel design; 2.5 cumulative GPA; 3.0 GPA in professional course work; consent of instructor. May be repeated for maximum of 12 hours credit.

CT 580. Internships in Textiles. (Var.) I, II, S. Professional work experience in the fiber-textile-apparel industry, related government agencies, dyestuff/chemical companies, museums, Cooperative Extension Service under faculty supervision. May be repeated for up to 12 credits. Pr.: CT 680, 2.5 GPA.

CT 600. Textile Analysis. (3) Alternate S. Laboratory techniques used to characterize textile structures with emphasis on fiber, color, finish, care, and aging. Pr.: CT 265 and 266; CHM 110 and 111. Not open to textile science majors.

CT 610. Computer-Aided Apparel Design. (3) I. Overview of computer-aided design as it relates to the apparel industry; introduction and application of computer hardware and software to apparel design, including apparel illustration, pattern design, pattern grading, and pattern marker development by computer. Six hours lab per week. Pr.: CIS 101, 102, and 104.

CT 620. Textile Yarn and Fabrics. (3) II. Technological, structural, and functional aspects of yarns and fabrics. Pr.: CT 265 and 266.

CT 630. History of Costume. (3) II. Interrelationship of costume and social, cultural, political, and economic environments from antiquity to present. Pr.: 3–6 hours humanities.

CT 635. Case Studies in Apparel and Textile Marketing. (2) II. An integration of previous course work through the study of real-life and simulated problems in the apparel and textile marketing industries. Emphasis on decision making and strategic planning. Pr.: CT 230; MKTIB 400; CT 520 or conc. enrollment.

CT 642. Textile Fibers. (3) I, in alternate years. In-depth study of fibers. Pr.: CT 265 and 266; and CHM 350.

CT 645. Import/Export Strategy in the Apparel and Textile Industries. (3) II. Analysis of the strategic importance of exporting and importing in the marketing strategy of apparel and textile related businesses; introduction to product development and global sourcing issues as they relate to individual business strategy. Pr.: CT 545, MKTIB 400.

CT 650. Apparel and Textiles Study Tour. (1–2) I, II, S. Supervised off-campus tour of facilities where textile products are designed, manufactured, tested, marketed, exhibited, and/or conserved. Pr.: CT 265 and 266 and 6 hours clothing and textiles.

CT 660. Apparel Design and Production IV. (4) I. Creation and analysis of apparel for different manufacturing categories; study and application of computer-aided design to apparel production; advanced pattern development; advanced apparel grading. Two hours lec. and six hours lab a week. Pr.: CT 610; CT 400.

CT 680. Physical Analysis of Textiles. (4) I. Theory, principles, and procedures in evaluating the physical properties of textile fibers, yarns, fabrics, and products for apparel, interior furnishings, and industrial uses. Three hours lec. and three hours lab per week. Pr.: CT 265 and 266.

CT 690. Apparel Design and Production V. (4) II. Creation and analysis of apparel for different manufacturing categories; portfolio development; job search strategies. Two hours lec. and six hours lab a week. Pr.: CT 660.

CT 715. Advanced Apparel Design. (3) II. Application of pattern drafting, manipulation, and/or draping with emphasis on the development of patterns for original designs. Six hours lab per week. Pr.: CT 660, CT 610.

CT 720. Functional Apparel Design. (3) II. The design process; criteria for design and evaluation of clothing systems for protection from various environmental hazards; design and evaluation of clothing systems with emphasis on functional aspects. Two hours of lec. and two hours recitation. Pr.: CT 265 and 266.

CT 725. Strategic Planning in the Apparel and Textile Industry. (3) II. Theoretical and applied analysis of apparel and textile industry market strategies. Examination of normative strategic planning models and effectiveness of market orientation in the apparel and textile industry; discussion of current external environmental and industry trends influencing strategy decisions by firms in the apparel distribution channel. Pr.: MKTIB 400; CT 545.

CT 730. Textile Conservation. (3) S, alternate years. Scientific theories of textile conservation related to fiber degradation, storage, repair, cleaning, and exhibition of historic items. Laboratory experience in solving conservation problems related to historic textiles. Two hours lec., two hours lab per week. Pr.: CT 630 or IDH 680.

CT 746. Textile Dyeing and Printing. (4) II, alternate years. In-depth study of color systems, colorimetry, physical and chemical properties of dyes, methods of dye-fiber association, and industrial dyeing and printing methods. Two hours lec. and six hours lab per week. Pr.: CT 642.

CT 747. Textile Finishes. (3) II, alternate years. Theory, application, evaluation, and identification of finishes and auxiliary products which are applied to textile fibers, yarns, and fabrics. Two hours lec. and three hours lab per week. Pr.: CT 642.

CT 765. Chemical and Optical Analysis of Textiles. (3) I, alternate years. Application of chemical, optical, spectroscopic, and chromatographic analysis of fibers, dyes, and finishes. Two hours lec. and three hours lab per week. Pr.: CT 642.

CT 775. Experimental Textiles. (Var.) On sufficient demand. Individual investigation into textile research. Pr.: CT 642 or 680.

Design fundamentals courses

Design fundamentals courses have been jointly developed by the Colleges of Human Ecology and Architecture and Design. All first-year interior design students take DSFN 201 in the fall and its sequel 202 in the spring. DSFN 203 is also only offered in the fall and should be taken concurrently with DSFN 201.

DSFN 201 and 202. Environmental Design Studio I (4) I **and Environmental Design Studio II.** (4) II. Foundation studies introducing principles, processes, and vocabularies of environmental design. Instruction in two- and three-dimensional visualization of objects and spaces. Instruction in the use of instrument-aided drawing, freehand drawing, and model building to represent and communicate design ideas at different scales of observation. Pr.: Admission to the College of Human Ecology interior design program or the College of Architecture and Design or permission of the dean of either college.

DSFN 203. Survey of the Design Profession. (3) I. Overview of the design professions. Comparative study of the working methods, and societal and occupational roles of the architect, interior architect, interior designer, landscape architect, and planner. Two lec. per week for 8 weeks.

Interior design and housing courses

IDH 210. Design and Behavior in the Interior Environment. (3) I. Developing awareness of aesthetic and behavioral relationships fundamental to interior design. Three hours lec. per week.

IDH 215. Interior Design Graphics. (3) I, II. Development of graphic communication skills used by interior design professionals. Six hours studio per week.

IDH 310. Construction Methods and Materials for Interior Design. (3) I. Introduction to concepts, selection, and application of construction processes, materials, and finishes. Introduction to codes, working drawings, and model building. Two hours lec. and two hours lab per week. Pr.: IDH 215 or DSFN 201 and 202.

IDH 315. Advanced Interior Design Graphics. (3) I. Design presentation techniques for interiors: Perspectives, color rendering, and advanced drafting methods. Six hours studio per week. Pr.: IDH 210; and IDH 215 or DSFN 201 and 202.

IDH 320. History of Interior Design I. (3) I. A historic survey of furniture, textiles, and the minor arts from antiquity to 1850. Progressive development of design and ornamentation characteristics as related to interiors. Pr.: HIST 101.

IDH 345. Space and Activity Planning. (3) II. Application of human factors, space standards, and floorplanning principles to limited-scale living and working environments. Six hours studio per week. Pr.: IDH 310 and 315.

IDH 360. History of Interior Design II. (3) II. A survey of modern design evolution in furniture, textiles, and the minor arts from 1850 to the present. Concepts, development, and application of modern technology to contemporary design and interiors. Pr.: ART 196 and HIST 101.

IDH 410. Housing and Its Environment. (3) I. Socioeconomic, political-legal, and consumer overview of housing. Includes individual, family, and public decisions related to residential alternatives, their acquisition, and housing and environmental standards. Three hours lec. per week. Pr.: Three hours sociology or economics.

IDH 415. Computer-Aided Design and Drafting for Interior Design. (2) II. Introduction to and application of microcomputer-aided design and drafting techniques used by interior design professionals. One hour lec. and two hours lab per week. Pr.: IDH 310, and consent of instructor.

IDH 425. Space and Activity Planning II. (3) I. This course will build upon and extend the knowledge and skill base gained by students through integration of space and activity planning, advanced interior design graphics, and computer aided drafting and design for interior design. Components will include advanced programming, space planning, and application of universal design based on social, cultural, behavioral, and physical requirements of the interior environment. Six hours studio per week. Pr.: IDH 345, IDH 415, and admitted to upper division of interior design program.

IDH 435. Interior Design and Housing Systems. (3) II. Introduction to lighting, heating, ventilating, air conditioning, and acoustic systems; principles, performance requirements, and components related to function, behavior, and aesthetics. Three hours lec. per week. Pr.: PHYS 101 and 103 or PHYS 115; IDH 310.

IDH 440. Home Appliance Design and Evaluation. (3) I. Principles of design, operation, and care of appliances used in the home; methods of evaluating appliance performance; laboratory demonstrates application of principles. Two hours lec. and three hours lab per week.

IDH 445. Interior Design Contract Documents Studio. (3) II. Design and execution of working drawings and specifications for interior design projects. Six hours studio per week. Pr.: IDH 425 and 435.

IDH 499. Problems in Interior Design and Housing. (Var.) I, II, S. Independent study. Pr.: Consent of instructor.

IDH 500. Intermediate Interior Design Studio. (3) S. Problem-solving in interior design. May substitute for Interior Design Studio IDH 445, IDH 545, or IDH 645. Students should plan to substitute this course for the next level studio in sequence. Pr.: IDH 315, 345, 435, and admitted to the interior design major.

IDH 530. Interior Design Practices and Procedures. (3) II. Ethics, business procedures, and professional development; contract services and administration; and preparation for job market entry as applied to the practice of interior design. Three hours lec. per week. Pr.: IDH 445 or conc. enrollment.

IDH 545. Senior Interior Design Studio I. (3) I. Advanced design problems dealing with human activities in the living environment. Solutions for systems and products based on social, cultural, and behavioral functions. Aesthetic coordination and selection of furnishings, finishes, art, and accessories. Six hours studio per week. Pr.: IDH 530.

IDH 599. Interior Design and Housing Internship. (3–4) I, II, S. Supervised off-campus professional experience in appropriate design-related firms, government agencies, or the housing industry. Pr.: Senior standing; 2.2 cumulative GPA and 2.5 GPA in professional area; IDH 445.

◆IDH 600. International Studies: British Cultural Survey. (3) Intersession. A study tour to acquaint the student with the rich artistic and cultural locations in London and other examples of architecture and town planning such as Georgian Bath. Lectures and tours target important design and furniture collections. England's varied examples of religious buildings compete for attention in this great center of art and architecture.

IDH 630. Household Equipment Theory. (3) I. Analytical study of appliance design, performance, and evaluation concepts for application in consumer decision-making. Not open to students with credit in IDH 440. Six hours rec. and lab per week. Pr.: Four hours lab science course.

IDH 645. Senior Interior Design Studio II. (3) II. Advanced design solutions to environmental and behavioral problems related to non-residential interiors. Planning, space analysis, and coordination of furnishings, fixtures, and materials, and equipment. Six hours studio per week. Pr.: IDH 530.

IDH 650. Advanced Design and Behavior in the Interior Environment. (3) I. The design of interior environments explored in an ecological, behavioral, and cultural context. Three hours lec. per week. Pr.: IDH 345.

IDH 651. Designing Supportive Environments. (3) II. Analysis of the age and ability related needs and challenges faced by children, older adults, and persons with disabilities. Team approaches to providing living and work environments that accommodate both universal and special human needs. Two hours lec., two hours studio/rec. per week. Pr.: IDH 410 and 445, or consent of instructor.

IDH 660. Kitchen and Utility Area Planning. (3) II. Functional and research basis for planning and arranging based on activity analysis, equipment, materials, lighting, and ventilation. Two hours lec. and two hours lab per week. Pr.: IDH 345 or ARCH 261.

IDH 680. Historic Fabric Design. (3) I. Interrelationships of fabric design and social, cultural, political, economic, and geographical environments from prehistoric times to present. Pr.: HIST 101; and CT 260 or 265 and 266.

IDH 710. Housing and Facilities Management Processes/Applications. (3) II. Application of theories, principles, and practices used in managing physical facilities and the residents or workers they house. Issues and problems encountered by professional managers in providing quality living or working environments within cost-effective operations. Three hours lec. per week. Pr.: IDH 410 and MANGT 420 or 720.

IDH 725. Community Housing Assessment. (3) I. Developing local and regional housing needs assessments and strategies to meet the challenges faced by lower income people and racial and ethnic minorities. Analysis of current housing and community development programs and public-private partnerships for affordable housing. Three hour seminar. Pr.: IDH 410 or instructor consent.

IDH 740. Advance Household Equipment. (3) II. Application of basic electrical, optical, refrigeration, heat transfer, psychometric, and detergent chemistry principles to the study of household equipment, with emphasis on techniques and instrumentation for consumer testing. Six hours rec. and lab a week. Pr.: IDH 440, PHYS 115, and senior or graduate standing.

IDH 760. Historic Preservation and Restoration of Interiors. (3) I. Principles, guidelines, and qualities of preservation and restoration of interiors. Research and application. Pr.: IDH 320 and 360; or CT 630; or ENVD 250 and 251.

Family Studies and Human Services

John P. Murray,* Director

Professors Bollman,* Jurich,* Moxley,* J. Murray,* Rolf, Russell,* Scheidt,* Schumm,* Smith, and Walker; Associate Professors Bergen,* Bradshaw, De Luccie,* Hoag,* Jones, Miller,* A. Murray,* Poresky,* Rainbolt,* Smit,* and Wilken;* Assistant Professors J. Garcia, Olsen,* and Webb;* Instructors Cantrell, R. Garcia, Hoover, Meyer, Molineux, O'Conner, Ward, and West; Emeriti: Professors Flanagan,* Hoeflin,* Huyck,* Kennedy,* Long,* Morse,* and Stith; Associate Professor McNeil;* Assistant Professor Larson.

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The School of Family Studies and Human Services is focused on the study of individuals and families from a multidisciplinary perspective. Programs emphasize developmental processes throughout the life cycle, interpersonal relationships, consumer and family economics, intervention for speech, language, and hearing problems, and educational programming for children and families.

Five programs are available at the undergraduate level, and they are communication sciences and disorders, early childhood education, family and consumer economics, family life and community services, and life span human development. Also, the school offers a dual degree program in family studies and human services and social work. In addition, students often combine degree programs in early childhood education and elementary education.

The school places great importance on laboratory and field experiences, along with classroom experiences. Field experiences for undergraduate students are available in the Early Childhood Laboratory, Family Center, Galichia Institute for Gerontology and Family Studies, the Hoeflin Stone House Child Care Center, and the Speech and Hearing Center.

For students pursuing early childhood education, the Early Childhood Laboratory and the Hoeflin Stone House Child Care Center provide on-campus observation and teaching. Both facilities are licensed by the state of Kansas and accredited by the National Academy of Early Childhood Programs.

Students in the family life and community services program must complete a field experience in a public or private agency that serves families, adolescents, single adults, children, or the elderly. Agency staff and school faculty guide students in the planning, direction, and evaluation of these supervised experiences. On-campus opportunities for gaining experience are available through the Family Center, FONE (a crisis hotline), the Galichia Institute for Gerontology and Family Studies, and various organizations and offices that address student needs. Students in communication sciences and disorders obtain practical experience in the Speech and Hearing Center.

Communication sciences and disorders

Bachelor of science in family studies and human services

The goal of the program in communication sciences and disorders is to educate professionals who are competent to help children and adults with communicative problems of speech, hearing, and language. The undergraduate program provides the foundation for the M.S. program in communication sciences and disorders, which is accredited by the Council on Academic Accreditation and meets the current requirements in speech-language pathology for the Certificate of Clinical Competence of the American Speech–Language and Hearing Association and for certification by the State of Kansas Department of Education. Determination of the student's program of study and the completion of all requirements for certification are the responsibility of the student and the advisor.

Students participate in observations of a variety of disorders and age groups in the Kansas State University Speech and Hearing Center. Students may, on invitation of the faculty, participate in supervised direct clinical experience in the Speech and Hearing Center.

General requirements (33–34 hours)

Communications (8–9)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3

Social sciences (6)

ECON 110	Principles of Macroeconomics	3
PSYCH 110	General Psychology	3

Humanities electives (6)

Students planning for educational certification may apply certain courses in western history/culture to the humanities requirement.

Natural sciences (7)

Biological sciences and physical sciences electives (One course must be taken from each area; one course must include a laboratory.)

Quantitative studies (6)

MATH 100	College Algebra	3
	or	
A college-level calculus course		3
STAT 330	Elementary Statistics for Social Sciences	3

Professional studies (37 hours)

LING 601	General Phonetics	3
FSHS 110	Introduction to Human Development	3
(Also fulfills a requirement for educational certification by the College of Education.)		
FSHS 310	Early Childhood	3
FSHS 301	Helping Relationship	3
	or	
FSHS 420	Interaction Techniques With Young Children	3
FSHS 360	Anatomy of Speech Mechanism	3
FSHS 361	Fundamentals of Hearing and Acoustic Phonetics	4
FSHS 442	Developmental Psycholinguistics	3
FSHS 443	Language Assessment and Intervention I	3
FSHS 446	Disorders of Articulation and Phonology	3
FSHS 449	Clinical Procedures in Communication Disorders	3
FSHS 560	Clinical Research in Communication Sciences and Disorders	3
FSHS 563	Speech Physiology	3

Integrative studies (6 hours)

GNHE 310	Human Needs	3
	or	
FSHS 350	Family Relationships and Gender Roles	3
University general education elective		3

Professional electives (8 hours)

Choose 8 hours from the following:

FSHS 343	Communication Sciences and Disorders (Optional introductory course)	3
FSHS 415	Manual Communication	3
FSHS 520	Augmentative and Alternative Communication	2
FSHS 521	Communication Disorders in Cerebral Palsy	1
FSHS 591	Undergraduate Topics in Communication Sciences and Disorders	1–3
FSHS 605	Communication Disorders and Aging	3
FSHS 615	Manual Communication II	3
Course that deals with non-disordered aspects of language		3
*Course that deals with world cultures.		3
Course in gerontology		3

Other supporting courses (6–23 hours)

Students must complete either Option I or Option II:

Option I.

Students planning to obtain educational certification must take:

FSHS 506	Middle Childhood and Adolescence	3
FSHS 550	The Family	3

In addition, the following are required for educational certification by the College of Education:

Take/pass Pre-Professional Skills Test

EDCEP 315	Educational Psychology	3
EDCIP 410	Foundations of Education	3
EDCIP 455	Teaching in a Multicultural Society	1-2
EDSP 324	Exceptional Child in the Regular Class	3
	or	
EDSP 500	Introduction to Human Exceptionality	3
	or	
EDSP 710	Education of Exceptional Individuals	3

Note: Educational certification also requires one course in human development, one course in western/culture, and one course in world cultures. These courses may count toward other requirements. Additional requirements toward certification are taken as part of the Master's program.

Option II.

Students who want to work in hospital/geriatric settings must take at least 6 hours of the following:

ANTH 280	Introduction to Physical Anthropology	3
ANTH 281	Introduction to Physical Anthropology Lab	1
BIOL 240	Structure and Function of the Human Body	8
BIOL 404	The Biology of Aging	3
FSHS 510	Human Development and Aging	3
FSHS 591	Undergraduate Topics in Communication Sciences and Disorders	1–2
GERON 315	Introduction to Gerontology	3
PSYCH 630	Human Neuropsychology	3

Unrestrictive electives **12–30**

Total for graduation **120**

*Students planning for educational certification should consult with advisor.

Communication sciences and disorders minor

A total of 18 hours is required, of which 6 must be chosen from the list of introductory and basic communication science courses, and 6 from the list of advanced courses in communication sciences and disorders. Students must choose the remaining 6 hours from either list. All courses are at or above the 300 level.

Students must receive a C or higher in courses used to satisfy the minor requirements.

Students must plan their minor with a faculty advisor from communication sciences and disorders.

Introductory courses in communication sciences and disorders (minimum of 6 credit hours)

LING 601	General Phonetics	3
FSHS 343	Communication Sciences and Disorders	3
FSHS 360	Anatomy of Speech Mechanism	3
FSHS 361	Fundamentals of Hearing and Acoustic Phonetics	4
FSHS 415	Manual Communication	3
FSHS 442	Developmental Psycholinguistics	3

Advanced courses in communication sciences and disorders (minimum of 6 credit hours)

Students may select other courses from the above list, or they may choose from the following list. Students must meet the prerequisites for each course chosen.

FSHS 443	Language Assessment and Intervention I	3
FSHS 446	Disorders of Articulation and Phonology	3
FSHS 449	Clinical Procedures in Communication Disorders	3
FSHS 520	Augmentative and Alternative Communication	2
FSHS 521	Communication Disorders and Cerebral Palsy	1
FSHS 560	Clinical Research in Communication Sciences and Disorders	3
FSHS 563	Speech Physiology	3
FSHS 591	Undergraduate Topics in Communication Sciences and Disorders	1–3
FSHS 605	Communication Disorders and Aging	3
FSHS 615	Manual Communication II	3
FSHS 720	Audiology I	3
FSHS 721	Audiology I Lab	1
FSHS 741	Fluency Disorders	3
FSHS 742	Language Assessment and Intervention II	3
FSHS 744	Aural Rehabilitation	3
FSHS 750	Voice and Resonance Disorders	4

Early childhood education

Bachelor of science in family studies and human services

This program is for students who wish to work in prekindergarten education programs in administrative or teaching positions, including work with parents and community resources as well as with young children.

The National Council for Accreditation of Teacher Education has approved K-State's early childhood education program. Students completing the early childhood education program in family studies and human services are eligible for certification by the Kansas State Department of Education in Early Childhood Education. Early childhood special education certification is available with advanced study. To complete the ECE program, students must have full admission into the teacher education program.

Admission to teacher education

Application forms for admission to teacher education are available in the Center for Student and Professional Services, 13 Bluemont Hall. The application should be filed two years prior to graduation. (See the College of Education section of this catalog for details.)

Students transferring 50 or more hours from another institution should apply at the time of initial enrollment.

Requirements for admission to early childhood teacher education program may also be found in the College of Education section. Details concerning these requirements include:

1. Hours: 50 total hours completed including all transfer and K-State credits, 35 of the 50 hours constitute a designated core of general education requirements which must have a 2.75 GPA. Students should consult with the advisor regarding specific requirements.

2. Expository writing: Both Expository Writing I and II must be completed satisfactorily, with grades no lower than a C.

3. Public speaking: SPCH 105, 106, or 109. A grade of C or better is required in one of the

public speaking courses. Students may complete the requirement with the quiz-out conducted by the speech department.

4. Mathematics and statistics: A grade of C or better is required in 3 hours of College Algebra or a college-level calculus course and 3 hours of statistics.

5. Foundation and professional supporting courses: For admission to teacher education, a 2.5 GPA is required in all foundation and professional supporting courses.

6. Overall GPA: For full admission, a 2.5 is required in all college work attempted, including transfer and K-State credits. Probationary admission may be granted when a student has a 2.4 GPA in all college work, provided all other requirements have been met. The student must achieve the required 2.5 GPA by the end of the next 30 hours completed or the student will be dropped from teacher education.

7. Pre-Professional Skills Test: Students must take and pass the Pre-Professional Skills Test in reading, writing, and mathematics. Scores of 172 in writing, 173 in reading, and 174 in mathematics are required for admission to teacher education.

The Pre-Professional Skills Test will be scheduled during both fall and spring semesters. Registration for the test must be completed by the announced deadline. Application forms for registration for the test are available in 13 Bluemont Hall.

Laboratory courses

Before participating in laboratory courses involving contact with children, students must undergo a physical examination, including a tuberculosis test, at their own expense. Students must not have any physical or mental conditions that would interfere with the health, safety, or welfare of children.

Students will be screened by the Kansas Department of Health and Environment for criminal and child abuse histories (through the Kansas Bureau of Investigation and Social and Rehabilitative Services). Students with questionable histories, as determined by the Kansas Department of Health and Environment, will be dropped from the early childhood education program.

Directed experiences (student teaching)

Application for student teaching must be made no later than the semester in which the student is enrolled in FSHS 546 Early Childhood Program Lab 2. Application forms are available from the director of Child Care Programs, 307 Justin Hall.

Enrollment in directed experiences is by permission only. Directed experiences may not be taken until the student has obtained full admission into teacher education and has completed FSHS 420, 540, 541, 545 and 546.

Certification

To be eligible for certification in early childhood education, students must maintain grade point averages required for full admission into teacher education, complete the early childhood education option, including a grade of C or better in directed experiences, and receive recommendation from the School of Family Studies and Human Services for submission to Kansas State University's certifying officer. Students must pass the National Teachers Examination as described in the College of Education section of this catalog.

Application for certification must be made during the semester in which the degree will be received. Forms are available in the Center for Student and Professional Services, College of Education, 13 Bluemont Hall.

General requirements (36–37 hours)

Communications (8–9)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3

Social sciences (9)

ECON 110	Principles of Macroeconomics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3

Humanities electives (6)

Natural sciences (7)

Biological sciences and physical sciences electives (One course must be taken from each area; one course must include a laboratory.)

Quantitative studies (6)

MATH 100	College Algebra	3
	or	
A college-level calculus course		3
Any 3-unit introductory statistics course		3

Professional courses (50 hours)

FSHS 110	Introduction to Human Development	3
FSHS 200	Sexuality and Health	2
FSHS 310	Early Childhood	3
FSHS 313	Preschool Child Lab	1
FSHS 420	Interaction Techniques with Young Children	3
FSHS 524	Professional Seminar in Early Childhood	3
FSHS 528	Exceptional Development in Early Childhood	3
FSHS 540	Curriculum for Cognitive and Language Development for Young Children	3
FSHS 541	Curriculum for Emotional, Social, and Physical Development of Young Children	3
FSHS 545	Early Childhood Program Lab I	1
FSHS 546	Early Childhood Program Lab II	2
FSHS 550	The Family	3
FSHS 565	Language Development	3
FSHS 589	Administration of Early Childhood Programs	3
FSHS 598	Directed Experiences*	8
FSHS 670	Working With Parents	3
FN 132	Basic Nutrition	3

Integrative studies (6 hours)

GNHE 310	Human Needs	3
	or	
FSHS 350	Family Relationships and Gender Roles	3
University general education elective (300 level or above, outside of FSHS)		3

Professional electives (12 hours)

ACCTG 231	Accounting for Business Operations	3
ACCTG 241	Accounting for Investing and Financing	3
AGEC 202	Small Business Operations	3
EDETC 318	Instructional Media and Technology	2
EDSP 500	Introduction to Human Exceptionality	3
EDSP 710	Education of Exceptional Individuals	3
EDSP 724	Characteristics of Mental Retardation	3
EDSP 728	Characteristics of Emotional and Behavioral Disorders	3
EDSP 777	Behavior Management for Exceptional Individuals	3
FSHS 300	Problems in FSHS: Preschool Lab Experience	Var.
FSHS 302	You and Your Sexuality	3
FSHS 312	Infant Observation Lab	1
FSHS 350	Family Relationships and Gender Roles	3
FSHS 400	Family and Consumer Economics	3
FSHS 506	Middle Childhood and Adolescence	3
FSHS 510	Human Development and Aging	3
FSHS 704	Topics in FSHS	3
FSHS 710	Child Care: Components and Issues	3
FSHS 728	Assessment of Young Children	3
FINAN 450	Introduction to Finance	3
MANGT 420	Management Concepts	3
MKTIB 400	Marketing	3

Additional requirements for certification (14 hours)

Social science elective**	3
Literature elective***	3
Select additional electives from the areas of humanities, social sciences, sciences, mathematics, general religion, philosophy, art and music history, and appreciation of art, architecture, music, or theatre to fulfill the general education requirements for teaching certification in early childhood education	8
Unrestricted electives	**6–7**
Total for graduation	**125**

*First aid/CPR certification required before enrollment in FSHS 598. This requirement can be met by successful completion of Red Cross or American Heart Association courses.

**A minimum of 9 hours other than psychology is required for certification.

***Literature for Children and Literature for Adolescents may not be used as literature electives but may be used to fulfill additional general education requirements.

Family and consumer economics

Bachelor of science in family studies and human services

The emphasis of this program is family financial planning, which combines course work in personal finance, family relationships and decision making, consumer rights, insurance, investments, retirement and estate planning, economics, and accounting. Emphasis is placed on understanding financial products and how they work, as well as the role of family in financial decisions. The program offers financial planning courses which satisfy the CFP® Board's education requirement for the CFP®/CERTIFIED FINANCIAL PLANNER® designation.

Kansas State University does not award the CFP® and Certified Financial Planner® designation. The right to use the marks CFP and Certified Financial Planner is granted by the CFP Board to those persons who have met its rigorous educational standards, passed the CFP Certification Examination, satisfied a work experience requirement, and agreed to the CFP Board Code of Ethics and Professional Responsibility. Only persons registered with the CFP Board are permitted to sit for the CFP Certification Examination. CFP certificates and licenses are issued only by the CFP Board.

General requirements (39–40 hours)

Communications (8–9 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3

Social sciences (9 hours)

ECON 110	Principles of Macroeconomics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3

Humanities (6 hours)

Students planning for educational certification may apply certain courses in western history/culture to the humanities requirement.

Natural sciences (7 hours)

(One course must be taken from each area; one course must include a laboratory.)

Quantitative studies (9 hours)

CIS 101	Introduction to Information Technology	1
CIS 102	Introduction to PC/Spreadsheet	1
CIS 103	Introduction to PC/Database	1
MATH 100	College Algebra	3
	or	
A college-level calculus course		3
STAT 350	Business and Economics Studies I	3

Professional studies (66 hours)

Professional FSHS courses (30 hours)

FSHS 105	Introduction to Personal and Family Finance	3
FSHS 110	Introduction to Human Development	3
FSHS 301	The Helping Relationship	3
FSHS 400	Family and Consumer Economics	3
FSHS 405	Advanced Personal and Family Finance	3
FSHS 505	Families, Employment Benefits and Retirement Planning	3
FSHS 525	Estate Planning for Families	3
FSHS 550	The Family	3
FSHS 595	Professional Seminar in Family Financial Planning	3
FSHS 709	Public Policy and Family Economic Well-Being	3

Integrative studies (6 hours)

FSHS 350	Family Relationships and Gender Roles	3
University general education elective		3

Other supporting courses (30 hours)

ECON 120	Principles of Microeconomics	3
ACCTG 231	Accounting for Business Operations	3
ACCTG 241	Accounting for Investing and Financing	3
MANGT 390	Business Law I	3
ACCTG 342	Taxation I	3
FINAN 450	Introduction to Finance	3
	or	
AGEC 513	Agricultural Finance	3
FINAN 250	Personal Investment and Risk Management	3
FINAN 460	Insurance	3
ECON 530	Money and Banking	3
FINAN 551	Investments	3

Unrestricted electives	**14–15**
Total for graduation	**120**

Family life and community services

Bachelor of science in family studies and human services

Family life and community services prepares students to develop and implement preventive education programs designed to strengthen family life and family relationships. Courses focus on the development of the individual in a family context throughout the life cycle.

General requirements (36–40 hours)

Communications (8–9)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3

Social sciences (6)

ECON 110	Principles of Macroeconomics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3

Humanities electives (6)

Natural sciences (7)

Biological sciences and physical sciences electives (One course must be taken from each area; one course must include a laboratory.)

Quantitative studies (6)

MATH 100	College Algebra	3
	or	
A college-level calculus course		3
Any 3-unit introductory statistics course		3

Professional studies (55 hours)

FSHS 110	Introduction to Human Development	3
FSHS 301	Helping Relationship	3
FSHS 302	You and Your Sexuality	3
FSHS 310	Early Childhood	3
FSHS 400	Family and Consumer Economics	3
FSHS 506	Middle Childhood and Adolescence	3
FSHS 510	Human Development and Aging	3
FSHS 550	The Family	3
FSHS 579	Pre-Directed Field Experience Orientation	1
FSHS 580	Directed Field Experience	8
FSHS 585	Professional Seminar in Family Life Education	3
FSHS 652	Black Families	3
FSHS 670	Working with Parents	3
FSHS elective		3
One lab (FSHS 312, 313, 507, or 508)		1
FSHS 105	Personal and Family Finance	3
SPCH 326	Group Process	3
ANTH 510	Kinship and Marriage	3
	or	
ANTH 200	Introduction to Cultural Anthropology	3

Integrative studies (12 hours)

FSHS 350	Family Relationships and Gender Roles	3
FN 132	Basic Nutrition	3
	or	
GNHE 310	Human Needs	3
Two university general education electives (300 level or above)		6

Unrestricted electives	**13–17**
Total for graduation	**120**

Life span human development

Bachelor of science in family studies and human services

This program combines the study of human development with a strong foundation in the arts, sciences, and humanities. Course work emphasizes the development of individuals across the life span, the processes underlying development and aging through the life cycle, and the factors that enhance, support, or impede human development. The life span human development program prepares students for graduate study in a variety of applied and academic fields.

General requirements (42–43 hours)

Communications (8–9)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3

Social sciences (9)

ECON 110	Principles of Macroeconomics	3
	or	
ECON 120	Principles of Microeconomics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3

Humanities electives (9)

Natural sciences (10)

BIOL 198	Principles of Biology	4
BIOL 310	Bioethics	3
Physical science course		3

Quantitative studies (6)

MATH 100	College Algebra	3
	or	
A college-level calculus course		3
Any 3-unit introductory statistics course		3

Professional studies (38 hours)

FSHS 110	Introduction to Human Development	3
FSHS 301	Helping Relationship	3
	or	
FSHS 420	Interaction Techniques with Young Children	3
FSHS 302	You and Your Sexuality	3
FSHS 310	Early Childhood	3
FSHS 400	Family and Consumer Economics	3
FSHS 506	Middle Childhood and Adolescence	3
FSHS 510	Human Development and Aging	3
FSHS 550	The Family	3
FN 132	Basic Nutrition	3

Select 2 of the 4 labs listed below.

FSHS 312	Infant Observation Lab	1
	or	
FSHS 313	Preschool Child Lab	1
FSHS 507	Middle Childhood Lab	1
	or	
FSHS 508	Adolescence Lab	1
FN 352	Personal Health	3
FSHS 670	Working with Families	3
Elective: any course in the American ethnic studies secondary major		3

Professional electives (18 hours)

FSHS or social science electives (300 level or above)

Unrestricted electives	**15–16**
Total for graduation	**120**

Dual degree: Family studies and human services and social work

Bachelor of science in family studies and human services
Bachelor of science, social work major

This program leads to a B.S. degree in family studies and human services through the College of Human Ecology, and to a B.S. degree with a social work major through the College of Arts and Sciences. The unique goal of this program is to give students skills in and knowledge of interpersonal relationships, an understanding of the developmental processes of children and families, and beginning social work skills. Upon completion of the program, students are equipped to work with families and individuals in social work settings. They are also eligible to take the social work licensure examination. The social work major, housed in the Department of Sociology, Anthropology, and Social Work, is accredited by the Council on Social Work Education.

General education courses (56–57 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
PSYCH 110	General Psychology	3
ECON 110	Principles of Macroeconomics	3
POLSC 110	Introduction to Political Science	3
	or	
POLSC 301	Introduction to Political Thought	3
SOCIO 211	Introduction to Sociology	3
BIOL 198	Principles of Biology	4
Physical science with lab		4
Biological or physical science		3
Biological or physical science with prerequisite in the same department		3
MATH 100	College Algebra	3
STAT 330	Elementary Statistics for Social Science	3
Fine arts elective		3
Philosophy elective		3
Literary or rhetorical arts course		3
Western heritage course		3
ANTH 200	Introduction to Cultural Anthropology	3
	or	
ANTH 204	Cultural Anthropology	3

Family studies and human services (28 hours)

FSHS 110	Introduction to Human Development	3
FSHS 310	Early Childhood	3
FSHS 313	Preschool Child Lab	1
FSHS electives		5
FSHS 506	Middle Childhood and Adolescence	3
FSHS 507	Middle Childhood Lab	1
	or	
FSHS 508	The Adolescent Lab	1
FSHS 510	Human Development and Aging	3
FSHS 550	The Family	3
FSHS 670	Working with Parents	3

Integrative studies (9 hours)

FSHS 350	Family Relationships and Gender Roles	3
FN 132	Basic Nutrition	3
University general education elective (300 level or above)		3

Social work professional courses (46 hours)

SOCWK 010	Introduction to Social Work Major	0
SOCWK 260	Introduction to Social Work	3
SOCWK 510	Social Welfare as a Social Institution	3
SOCWK 515	Human Behavior in the Social Environment	3
SOCWK 519	Methods of Social Work Research	4
SOCWK 550	Field Practicum Research	1
SOCWK 560	Social Work Practice I	4
SOCWK 561	Social Work Practice II	4
SOCWK 562	Field Experience	12
SOCWK 564	Social Work Professional Seminar	3
SOCWK 565	Program and Policy Formulation and Analysis	3
SOCWK 568	Social Work Practice III	3
SOCWK 610	Topics/Social Work	3

Total for graduation 139–140

See Department of Sociology, Anthropology, and Social Work, College of Arts and Sciences, regarding acceptance into the social work component of this program.

Family studies and human services courses

FSHS 105. Introduction to Personal and Family Finance. (3) I, II. Fundamental principles for making financial decisions. Analysis and evaluation of personal and family money management strategies.

◆FSHS 110. Introduction to Human Development. (3) I, II. A study of life span human development through an individual's awareness and understanding of his or her own physical, social, and psychological growth and relationships with family, peers, and others.

FSHS 200. Sexuality and Health. (2) I, II. Introduction to human sexuality and health, including sexually transmitted diseases and AIDS. Attributes of comprehensive programs, K–12, that incorporate state-defined goals for sexuality education and health needs of children and adolescents.

FSHS 300. Problems in Family Studies and Human Services. (Var.) I, II, S. Independent or small group study. Pr.: Consent of instructor.

FSHS 301. The Helping Relationship. (2-3) I. Characteristics of the helping relationship; consideration of personal qualities necessary for recognizing needs of individuals and families; identification of effective procedures for referral to appropriate professions and agencies. Pr.: FSHS 110 or PSYCH 110.

FSHS 302. You and Your Sexuality. (3), I, II. Study of the role and meaning of human sexuality in relation to oneself, as well as in interrelationships with others. Pr.: FSHS 110 or PSYCH 110.

FSHS 310. Early Childhood. (3) I, II. Principles of growth and development of children from conception through age five, including familial, societal, and other ecological factors affecting young children's development. Pr.: FSHS 110 or PSYCH 110.

FSHS 312. Infant Observation Lab. (1) I, II. Observation of the behavior and development of children from infancy through toddlerhood. Prior or concurrent enrollment with FSHS 310.

FSHS 313. Preschool Child Lab. (1) I, II. On sufficient demand. Observation of the development and guidance of children from 18 months to five years of age, with emphasis on observation of children in groups. Prior or concurrent enrollment with FSHS 310.

FSHS 343. Communication Sciences and Disorders. (3) I. A survey of normal communication processes and communication disorders and an introduction to the fields of speech pathology and audiology that are responsible for the clinical management of these disorders.

FSHS 349. Experimental Analysis of Vocal Behavior. (3) II. Study of behavior analysis principles that are relevant to the experimental analysis of vocal behavior. The types of vocal behavior investigated extend from uncoded utterances to complex language responses.

◆FSHS 350. Family Relationships and Gender Roles. (3) I, II. Effects of family interaction upon individual development and gender roles; consideration of premarital, marital, and parent-child relationships. Pr.: FSHS 110 or PSYCH 110 or SOCIO 211.

FSHS 360. Anatomy of the Speech Mechanism. (3) II. Anatomy of the structures involved in speech production. The course includes histology of the larynx and an overview of speech physiology. Pr.: Junior standing.

FSHS 361. Fundamentals of Hearing and Acoustic Phonetics. (4) I. Study of the information needed for a basic understanding of acoustic phonetics and auditory perception, including vocal tract resonances. Pr.: Junior standing.

FSHS 400. Family and Consumer Economics. (3) I. Issues and problems confronting consumers. Emphasis on current economic issues and their potential for impacting families and society. Pr.: ECON 110 or conc. enrollment.

FSHS 405. Advanced Personal and Family Finance. (3) I. In-depth applications of personal and family money management principles with emphasis on credit, savings, insurance, and budgeting. Pr.: FSHS 105.

FSHS 415. Manual Communication. (3) I, II. Study of background information in current trends in the use of sign language. Restricted to sign language used in the United States. Includes instruction in the American Manual Alphabet and Vocabulary for about 700 signs. Primary focus will be application of beginning skills for communication with those who depend on this form of communication.

FSHS 420. Interaction Techniques with Young Children. (3) I. A developmental approach to the acquisition of interaction techniques conducive to healthy emotional and self-concept growth in the child from birth to five years. Two hours lec. and one hour lab. Pr.: FSHS 310.

FSHS 440. Human Development Facilitation. (2) I, II. Applied study of leadership skills in small discussion groups, with emphasis on learning and facilitating Introduction to Human Development concepts. Taken conc. with FSHS 441. Pr.: FSHS 110, preparatory workshop, and consent of instructor.

FSHS 441. Human Development Facilitation Lab. (1) I, II. Recitation group leader for FSHS 110. Assists students in discussion and preparing group presentations; evaluates written work and course participation of students in group. Conc. with FSHS 440.

FSHS 442. Developmental Psycholinguistics. (3) I. Review of research and theory of early development of language comprehension and production, involving vocalization, phonology, morphology, syntax, semantics, and pragmatics. Includes discussion of the relationship between cognition and language, as well as other variables influencing language acquisition. Pr.: LING 601 and junior standing.

FSHS 443. Language Assessment and Intervention. (3) I, II. The nature of language disorders, as well as general principles of language assessment and intervention, is presented. Specific language assessment and intervention methodologies for individuals 0-5 years of age are reviewed. Communication profiles associated with specific language impairment, mental retardation, emotional disturbance, hearing impairment, and acquired aphasia are examined. Pr.: FSHS 442 and junior standing.

FSHS 446. Disorders of Articulation and Phonology. (3) II. Theory, research, and principles of (a) normal/abnormal phonetic and phonologic development, (b) assessment of speech sound disorders, and (c) intervention for speech sound disorders. Pr.: LING 601 and junior standing.

FSHS 449. Clinical Procedures in Communication Disorders. (3) II. Orientation to clinical practicum. Opportunities for clinical observation of speech, language, and hearing evaluation and treatment. Study of diagnostic tools, treatment materials, equipment, and clinical procedure. Pr.: Concurrent enrollment in FSHS 443 and 446 and junior standing.

FSHS 499. Independent Study in Family Economics. (Var.) I, II, S. Independent study. Pr.: Consent of instructor.

FSHS 505. Families, Employment Benefits, and Retirement Planning. (3) I. Study of micro and macro considerations for retirement planning. Survey of various types of retirement plans, ethical considerations in providing retirement planning services, assessing and forecasting financial needs in retirement, and integration of retirement plans with government benefits. Pr.: FSHS 405.

◆FSHS 506. Middle Childhood and Adolescence. (3) I. Principles of growth and development during middle childhood and adolescence, including familial, societal, and other ecological factors affecting development of youth. Pr.: FSHS 110 or PSYCH 110.

FSHS 507. Middle Childhood Lab. (1) I. Analysis of situations facing children age six to twelve and design of interventions to enable these children to cope with these situations. Prior or conc. enrollment in FSHS 506.

FSHS 508. Adolescent Lab. (1) I. Analysis of situations facing adolescents and design of interventions to enable adolescents to cope with these situations. Prior or conc. enrollment in FSHS 506.

FSHS 510. Human Development and Aging. (3) I. Survey of issues, research, and problems in aging and human development throughout adulthood, with particular emphasis upon the later years. Pr.: FSHS 110 or PSYCH 280.

FSHS 520. Augmentative and Alternative Communication. (2) I. This course is concerned with an introduction to augmentative and alternative communication (AAC) to provide the student with an overview of characteristics, evaluation, and management information serving permanently or temporarily nonspeaking individuals. Course emphasis will be on experience with electronic communication devices. Pr.: FSHS 443, 446 and 449, or concurrent enrollment.

FSHS 521. Communication Disorders in Cerebral Palsy. (1) II. This course provides the student with information about the effects of cerebral palsy on communication, about assessment of communication disorders in this population, and about appropriate intervention techniques and approaches. Should be taken concurrently with FSHS 520. Pr.: FSHS 443, 446, and 449, or concurrent enrollment.

FSHS 524. Professional Seminar in Early Childhood Education. (3) II. Examination of programs for young children, including philosophical and theoretical foundations. Implementation and evaluation of program models and related issues and research. Pr.: FSHS 310 or PSYCH 280.

FSHS 525. Estate Planning for Families. (3) II. Introduction to fundamentals of the estate planning process. Includes property transfer, tax consequences, probate avoidance, powers of appointment, and various tools/techniques used in implementing an effective estate plan.. Pr.: FSHS 405.

FSHS 528. Exceptional Development in Early Childhood. (3) II. Exceptional development in early childhood (birth to five years), including sensory impairments, physical impairments, communication disorders, mental retardation, behavioral problems, and gifted performance; formal and informal assessment in all developmental areas; the family's role in the assessment/referral/intervention process. Pr.: FSHS 310.

FSHS 540. Curriculum for Cognitive and Language Development of Young Children. (3) I. Planning for the enhancement of cognitive and language development. The application of child development theory to the planning of programs for young children within the major curriculum areas. Conc. with FSHS 545 or 546. Prior or conc. with FSHS 565. Pr.: FSHS 310 and 313 and admission into teacher education.

FSHS 541. Curriculum for Emotional, Social, and Physical Development of Young Children. (3) II. Planning for the enhancement of physical, social, and emotional development. The application of child development theory to the planning of programs for young children within the major curriculum areas. Conc. with FSHS 545 or 546. Pr.: FSHS 310 and 313 and admission into teacher education.

FSHS 545. Early Childhood Program Lab I. (1) I, II. Application of principles and techniques to planning, implementing, and evaluating developmentally-appropriate activities for young children in a supervised lab setting and in recitation sessions. Conc. with FSHS 540 or 541. Pr.: FSHS 310 and 313 and admission into teacher education.

FSHS 546. Early Childhood Program Lab II. (2) I, II. Advanced application of principles and techniques for developmentally-appropriate programs for young children. Planning, implementing, and evaluating activities in a supervised lab setting. Conc. with FSHS 540 or 541. Pr.: FSHS 545 and admission into teacher education.

FSHS 550. The Family. (3) II. Consideration of the family throughout the family life cycle; developmental tasks at each stage. Use and impact of family support services. Pr.: Nine hours in FSHS or other social science and junior standing.

FSHS 560. Clinical Research in Communication Sciences and Disorders. (3) I. Logic and methods of clinical research, with emphasis on those most frequently used in speech-language pathology and audiology. Experience formulating, doing, and evaluating research. Pr.: STAT 330 or equiv.

FSHS 563. Speech Physiology. (3) I. Physiology of the structures involved in speech production. This course includes methods of investigation and recent research in experimental phonetics, as well as developmental anatomy of the head and neck. Pr.: FSHS 360.

FSHS 565. Language Development. (3) Survey of the development of speech and language skills in children. Pr.: FSHS 310 or EDEL 300.

FSHS 579. Pre-Directed Field Experience Orientation. (1) I. Consideration and application of professional knowledge and skills necessary for selection and placement in a social agency for a supervised experience in direct service to clients. Pr.: Senior standing.

FSHS 580. Directed Field Experience. (8) II. A block field placement in local agencies. Faculty-supervised experience in direct service to clients: individuals, groups, and communities. Weekly seminar during placement emphasizes theory underlying the practice. Pr.: FSHS 301 or SOCWK 260; FSHS 550 and 579; 2.5 GPA in FSHS foundation and professional courses; and consent of instructor.

FSHS 585. Professional Seminar in Family Life Education. (3) II. Consideration of professional philosophy, identity, ethics, career development, and characteristics of client populations. Development of skills for family life educators working in agencies with various socioeconomic, age, and ethnic groups. Pr.: Conc. enrollment in FSHS 580.

FSHS 589. Administration of Early Childhood Programs. (3) I. Rationale for and techniques of administering programs for preschool children, including health, education, social services, parent involvement. Pr.: Nine hours in FSHS or other social science and junior standing.

FSHS 590. Proseminar in Family Studies and Human Services. (1–3) On sufficient demand. Review of specific issues or professional practices affecting children and/or families. Pr.: Junior standing and consent of instructor.

FSHS 591. Undergraduate Topics in Communication Sciences and Disorders. (1–3) Review of current topics in speech-language pathology and/or audiology. May be repeated for a maximum of 6 hours with a change in topic. Pr.: Consent of instructor.

FSHS 595. Professional Seminar in Family Financial Planning. (3) II. Examination of professional issues in family financial planning, including ethical considerations, regulation and certification requirements, communication skills, and professional responsibility. Development of skills needed for family financial planners working with families in meeting their financial needs. Pr.: Senior standing and FSHS 405.

FSHS 598. Directed Experiences in Early Childhood Education. (8) I, II, S. Participation in a preschool program: planning, instruction, evaluation. Prearrangement and consent of instructor required. Pr.: FSHS 420, 540, 541, 545, 546, and admission into teacher education.

FSHS 600. Economic Status of Women. (3) On sufficient demand. Socioeconomic factors affecting the economic roles of women. Income, wealth, discrimination, employment, household production, and attitudes as they pertain to the economic position of women in society. Pr.: Junior standing and ECON 110.

FSHS 603. Coping with Life Crises. (3) I. Examination of the effects of human competencies and coping strategies on successful adaptation to anticipated life crises, developmental transitions, and sudden, unexpected life events. Pr.: FSHS 110 or PSYCH and 6 hours of social science.

FSHS 605. Communication Disorders and Aging. (3) An introduction to the most common communication disorders of older persons. Appropriate service delivery models and special needs of the elderly are discussed. Pr.: Consent of instructor.

FSHS 615. Manual Communication II. (3) Instruction in an additional 400 to 500 signs in the SEE system. Introduction to elementary ASL techniques. Discussion of other augmentative communication systems. Research will be conducted in the use of various manual communication systems with special populations, including aphasic, language disabled, mentally handicapped, and others. Pr.: FSHS 415 or basic sign language skills.

FSHS 652. Black Families. (2–3) Selected topics for understanding life styles of black families. Implications for professionals working with black children and families. Pr.: Nine hours in FSHS or other social science and junior standing.

FSHS 654. Death and the Family. (2–3) II. Exploration of contemporary attitudes toward death and dying; related influences on individual development and family life. Pr.: FSHS 550 or SOCIO 640.

◆**FSHS 670. Working with Parents.** (3) II. Approaches to parenting and parent education with emphasis on programmatic implications of life-span developmental principles within a family context. Pr.: FSHS 110; and FSHS 350 or 550.

FSHS 675. Field Study in Family Economics. (1–3) I, II. Supervised experiences in financial counseling, community action, or consumer services. Pr.: Consent of instructor.

FSHS 700. Problems in Family Studies and Human Services. (Var.) I, II, S. Independent study on aspects of human development and family studies. Pr.: Consent of instructor.

FSHS 704. Seminar in Family Studies and Human Services. (Var.) I, II, S. Interpretation and evaluation of information on varied topics relating to family members. May be taken for a maximum of nine hours. Pr.: Nine hours of FSHS or other social science.

FSHS 705. Practicum in Speech-Language Pathology. (1–3) I, II, S. Supervised practice in the use of the methods and materials of speech-language pathology. Pr.: FSHS 449 and consent of instructor.

FSHS 706. Practicum in Audiology. (1–3) I, II, S. Supervised practice in the use of equipment, materials, and methods of audiology. Pr.: FSHS 720 or conc. enrollment and consent of instructor.

FSHS 708. Topics in Family Studies and Human Services. (2–3) I, II, S. Review of recent research and theory related to exploration of methods and family and interpersonal processes. Pr.: Consent of instructor. May be taken more than one semester.

FSHS 709. Public Policy and Family Economic Well-Being. (3) I. Analysis of conceptual models for policy choices. Impact of socioeconomic and public policy factors on family economic well-being, including the special issues faced by financially disadvantaged and nontraditional households. Pr.: Nine hours in FSHS or other social sciences.

FSHS 710. Child Care: Components and Issues. (2–3) II. Resources and facilities of quality child care; exploration of methods and philosophies of such programs; designed for those working with paraprofessional child care personnel. Pr.: Fifteen hours of either social science and/or FSHS.

FSHS 720. Audiology I. (3) I, II. Fundamental topics in audiology. Included are monitoring of equipment calibration, pure tone measurements, masking, speech testing, and tympanometry. Laboratory practice is required. Pr.: FSHS 361.

FSHS 721. Audiology I Laboratory. (1) I, II, in alternate years. Effects of noise on hearing. Development, management, and control of community hearing conservation programs. Pr.: FSHS 720.

FSHS 728. Assessment of Young Children. (3) I. Theory and practice of individual assessment of handicapped and normal children, infancy to age eight, including cognitive, language, fine and gross motor, social, and self-help skills. Focus on selection, administration, interpretation, and evaluation of screening and comprehensive evaluation instruments for assessment and individual program planning. Pr.: FSHS 310.

FSHS 740. Play Facilitation. (3) II. The emphasis on this course is the empirical study and practice of play as an educational, evaluative, and therapeutic intervention with young children. Pr.: FSHS 540 or consent of instructor.

FSHS 741. Fluency Disorders. (3) I. Research and theory concerning etiology, characteristics, assessment, and treatment of individuals with disfluency problems. Pr.: FSHS 560.

FSHS 742. Language Assessment and Intervention II. (3) II. Theory and research concerning language disorders in school-aged children are presented. Specific language assessment and intervention methodologies for this population are reviewed. Dialectal and bilingual considerations for assessment and intervention are addressed. Pr.: FSHS 443.

FSHS 744. Aural Rehabilitation. (3) II. Study of and techniques for the habilitation or rehabilitation of speech and language problems of the hearing impaired. Pr.: FSHS 720.

FSHS 750. Voice and Resonance Disorders. (4) II. Research and theory concerning etiology, characteristics, assessment, and management of individuals with laryngeal disorders and orofacial anomalies. Pr.: FSHS 563.

FSHS 770. Economics of Aging. (3) On sufficient demand. Analysis of economic factors associated with aging; implications for individuals, society, and the economy. Pr.: Nine hours of FSHS or other social sciences.

Foods and Nutrition

Mary Clarke, Acting Head

Professors Bowers,* E. Chambers,* Clarke, Grunewald,* Koo,* Reeves,* and Setser;* Associate Professors Harbers,* Holcomb,* and Peters; Assistant Professor Baybutt;* Instructors D. Chambers and Morcos; Emeriti: Professors Caul,* Fryer,* Newell,* and Tinklin;* Associate Professors Atkinson and Smith.*

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The programs in the Department of Foods and Nutrition focus on the physical, chemical, nutritional, and sensory properties of food; on the metabolism of nutrients; on nutrient requirements throughout the life span; and on issues related to diet and health.

The Department of Foods and Nutrition offers three programs leading to a bachelor of science degree in foods and nutrition: food science, nutritional sciences, and public health nutrition.

A dual-degree program in nutrition and exercise sciences is offered jointly with the Department of Kinesiology. Students earn a B.S. in foods and nutrition and a B.S. in kinesiology.

Students in all programs gain valuable experience by completing field experiences with community and governmental agencies, food industries, and businesses. Students may also meet the academic requirements for membership in the American Dietetic Association (ADA).

Specialized laboratories for sensory analysis of food and food product development are available for research and instruction. The department has an animal laboratory that is fully accredited by the American Association for Accreditation of Laboratory Animal Care (AAALAC). In cooperation with the College of Veterinary Medicine, animals housed and maintained in the laboratory receive veterinary care to comply with the current NIH guidelines. A Nutritional Assessment laboratory includes facilities for physical and dietary assessments.

Food science

Bachelor of science in foods and nutrition

Food scientists are concerned with all aspects of the food industry, from processing the raw material to consumer acceptance of the finished product. Food scientists provide an ever-increasing variety of foods to meet high standards of safety, sanitation, and quality. Positions are available in food marketing, technical sales, quality control, sensory analysis, product development, or consumer education.

This program is approved by the Institute of Food Technologists (IFT) for having met the standards for undergraduate education in food science and technology.

General studies courses (68–69 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
Communications elective		3
ECON 110	Principles of Macroeconomics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
GNHE 310	Human Needs	3
	or	
FSHS 350	Family Relationships and Gender Roles	3
Humanities elective		6
BIOL 198	Principles of Biology	4
BIOL 455	General Microbiology	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Lab	2
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Lab	2
PHYS 115	Descriptive Physics	4
MATH 210	Technical Calculus I	3
MATH 211	Technical Calculus II	3
STAT 320	Elements of Statistics	3
	or	
STAT 340	Biometrics	3

Professional core courses (30–31 hours)

ASI 305	Fundamentals of Food Processing	3
FN 400	Human Nutrition	3
ASI 411	Introduction to Food Chemistry	3
	or	
FN 501	Food Science: Chemistry and Applications	3
FN 701	Sensory Analysis of Foods	2
FN 705	Food Product Development	3
FN 780	Problems in Foods and Nutrition	3
	or	
FN 603	Food Science Internship	3
FN 691	Senior Project	2
FN 727	Physical Methods of Food Analysis	2
ASI 727	Chemical Methods of Food Analysis	2
ATM 540	Introduction to Food Engineering	3
ATM 541	Introduction to Food Engineering Lab	1
ASI 607	Food Microbiology	4

Other professional courses (10 hours)

Foods and nutrition elective		3
FN 301	Food Trends, Legislation and Regulations	3
FN413	Science of Food	4

Professional electives (4–6 hours)

Select from the following:

ASI 350	Meat Science	3
ASI 502	Principles of Dairy Food Processing	4
ASI 671	Meat Selection and Utilization	2
ASI 695	Quality Assurance	3
GRSC 100	Principles of Milling	3
GRSC 602	Cereal Science	3
GRSC 625	Flour and Dough Testing	3
GRSC 635	Baking Science I	2
	and	
GRSC 636	Baking Science I Lab	2
GRSC 651	Food and Feed Plant Sanitation	4
ATM 520	Food Manufacturing Lab	2
FN 610	Life Span Nutrition	3
FN 690	Principles of HACCP	1
FN 789	Advanced Application of HACCP Principles in the Food Industry	1
FN 792	Advanced Principles of Hazard Analysis and Risk Assessment	1
FN 793	Validation of HACCP Plans	1
FN 794	HACCP and Food Inspection	1
BIOL 240	Structure and Function of the Human Body	8
ENGL 516	Written Communications for the Sciences	3
MC 320	Principles of Advertising	3
MC 325	Fundamentals of Public Relations	3
MKTG 400	Marketing	3
MKTG 450	Consumer Behavior	3
PSYCH 480	Fundamentals of Sensation and Perception	3
PSYCH 570	Psychobiology	3
CIS 101	Information Technology	1
CIS 102	Information Technology: Spreadsheet Technology	1
CIS 103	Information Technology: Database Technology	1
CIS 104	Information Technology: Word Processing Applications	1

Unrestricted electives **4–8**

Total hours for graduation **120**

Nutritional sciences (pre-medicine)

Bachelor of science in foods and nutrition

The nutritional sciences program emphasizes the biological and physical sciences and provides students with the background necessary to understand the function and metabolism of nutrients. The program provides an excellent foundation for students considering careers in medicine, dentistry, and other health science professions. Academic requirements for entering medical school may be met through this degree.

General studies courses (60–62 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 300	Expository Writing III	3
	or	
ENGL 516	Written Communication for the Sciences	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
ECON 110	Principles of Macroeconomics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
Humanities electives		6
BIOL 198	Principles of Biology	4
BIOL 240	Structure and Function of the Human Body	8
BIOL 455	General Microbiology	4
BIOL 540	Molecular Biology	3
	or	
BIOL 400	Human Genetics	3
MATH 150	Trigonometry*	3
MATH 220	Analytic Geometry and Calculus I	4
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4

Professional courses (30 hours)

FN 400	Human Nutrition	3
FN 413	Science of Food	4
FN 450	Nutritional Assessment	2
FN 500	Public Health Nutrition	3
FN 550	Nutrient Metabolism	4
FN 610	Life Span Nutrition	3
FN 630	Clinical Nutrition	5
FN elective		3

GHNE 310	Human Needs	3
	or	
FSHS 350	Family Relationships and Gender Roles	3

Supporting courses (21 hours)

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Lab	2
CHM 550	Organic Chemistry II	3
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Lab	2

Unrestricted electives	**7–9**
Total hours for graduation	**120**

This option is designed to meet requirements for entrance to medical school.

*If taken in high school, substitute computer science, statistics, or higher mathematics course (3–4 hours).

Nutrition and exercise sciences

Bachelor of science in foods and nutrition
Bachelor of science in kinesiology

Nutrition and exercise sciences is a dual-degree program. Students complete a total of 143–150 credit hours and earn two degrees, one from the Department of Foods and Nutrition and the second from the Department of Kinesiology. Graduates of this program may pursue careers in health programs offered by hospitals, industries, wellness centers, public and private clinics, fitness camps, and athletic clubs.

In addition, students in this program can fulfill the minimum academic requirements for membership in the American Dietetic Association by including four specified requirements in their course work.

Those interested in becoming registered dietitians can do so by completing an additional experience requirement and passing a national examination. Students who would like to meet these requirements should consult their advisor.

General studies and supporting courses (77–83 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
ENGL 300	Expository Writing III	3
	or	
ENGL 516	Written Communication for the Sciences	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
PSYCH 110	General Psychology	3
ECON 110	Principles of Macroeconomics	3
SOCIO 211	Introduction to Sociology	3
AMETH 160	Introduction to American Ethnic Studies	3
	or	
ANTH 200	Introductory to Cultural Anthropology	3

Additional courses as specified in the General Requirements section for Arts and Sciences:

Humanities	11–12
(One course each in fine arts, philosophy, Western heritage, and literary or rhetorical arts.)	
International studies overlay (1 course)*	0–3

BIOL 198	Principles of Biology	4
BIOL 240	Structure and Function of the Human Body	8
BIOL 455	General Microbiology	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
BIOCH 521	General Biochemistry	3
PHYS 113	General Physics	4
MATH 100	College Algebra	3
	or	
MATH 220	Analytic Geometry and Calculus I	4
STAT 320	Elements of Statistics	3
	or	
STAT 330	Elementary Statistics for the Social Sciences	3
CIS 101	Information Technology	1

Select two hours of the following:

CIS 102	Information Technology: Spreadsheet Applications	1
CIS 103	Information Technology: Database Applications	1
CIS 104	Information Technology: Word Processing Applications	1

Professional courses (68–69 hours)

Nutrition science (32–33 hours)

FN 352	Personal Health	3
FN 400	Human Nutrition	3
FN 413	Science of Food	4
FN 450	Nutritional Assessment	2
FN 500	Public Health Nutrition	3
FN 550	Nutrient Metabolism	3
FN 610	Life Span Nutrition	3
FN 630	Clinical Nutrition	4
FN elective		2–3
GHNE 310	Human Needs	3
	or	
FSHS 350	Family Relationships and Gender Roles	3

Nutrition science or exercise science (6 hours)

FN 635	Nutrition and Exercise	3
	or	
KIN 635	Nutrition and Exercise	3
FN 650	Practicum in Nutrition	3
	or	
KIN 520	Practicum in Exercise Science	3

Exercise science (30) hours)

KIN 220	Dynamics of Sport and Exercise	3
KIN 250	Measurement and Research Techniques	3
KIN 330	Biomechanics	3
KIN 335	Physiology of Exercise	3
KIN 340	Physical Activity in Contemporary Society	3
KIN 345	Psychological Dynamics of Physical Activity	3
KIN 625	Exercise Testing and Prescription	3
KIN 655	Fitness Promotion	3

Select one course from each category below:

Category A (Biological basis of human movement)

KIN 601	Cardiorespiratory Exercise Physiology	3
KIN 603	Cardiovascular Exercise Physiology	3
KIN 605	Topics/Biological Basis of Kinesiology	3

Category B (Behavioral basis of human movement)

KIN 600	Exercise Psychology	3
KIN 602	Gender Issues in Sports and Exercise	3
KIN 604	Exercise and Mental Health	3
KIN 606	Topics/Behavioral Basis of Kinesiology	3

Total hours for graduation	**145–150**

*The international studies overlay requirement maybe satisfied at the same time as satisfying the humanities or the social sciences requirement.

Public health nutrition

Bachelor of science in foods and nutrition

The public health nutrition curriculum includes emphasis on health promotion, as well as foods and nutrition, and allows opportunities for pursuing a secondary major, such as gerontology, American ethnic studies, or international studies. Students also gain first-hand experience with public health issues through completion of a practicum.

Public health nutritionists develop community programs to promote nutrition and good health; educate people about the relationship between diet and health; conduct research on the psychological, cultural, social, economic, and environmental issues related to nutrition and health; or work with special groups who are at risk for nutrition-related or health problems, such as pregnant women, infants, and the elderly. Opportunities are available with local health departments and the Peace Corps, as well as various agencies involved in international development.

General studies courses (68–70 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
ENGL 300	Expository Writing III	3
	or	
ENGL 516	Written Communication for the Sciences	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
PSYCH 110	General Psychology	3
ECON 110	Principles of Macroeconomics	3
SOCIO 211	Introduction to Sociology	3
AMETH 160	Introduction to American Ethnic Studies*	3
	or	
ANTH 204	Introduction to Cultural Anthropology*	3
Humanities elective		6
BIOL 198	Principles of Biology	4
BIOL 240	Structure and Function of the Human Body	8
BIOL 455	General Microbiology	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
BIOCH 521	General Biochemistry	3
MATH 100	College Algebra	3
	or	
MATH 220	Analytic Geometry and Calculus I	4
STAT 330	Elementary Statistics for Social Science	3

Select 3 of the following:

CIS 101	Information Technology	1
CIS 102	Information Technology: Spreadsheet Applications	1
CIS 103	Information Technology: Database Applications	1
CIS 104	Information Technology: Word Processing Applications	1

Professional and supporting courses (35–36 hours)

Foods and nutrition elective		2–3
FN 352	Personal Health	3
FN 400	Human Nutrition*	3
FN 413	Science of Food	4
FN 450	Nutritional Assessment	2
FN 500	Public Health Nutrition	3
FN 550	Nutrient Metabolism	3
FN 610	Life Span Nutrition*	3
FN 630	Clinical Nutrition	4
FN 650	Practicum in Nutrition	3
GHNE 310	Human Needs	3
	or	
FSHS 350	Family Relationships and Gender Roles	3

Secondary major*	**24**

The student will select a secondary major such as the following in consultation with the faculty advisor. Requirements will fit the precedent established by each secondary major.

- American ethnic studies
- Gerontology
- International studies
- Latin American studies
- Women's studies

Students should see an advisor in the selected secondary major before the junior year. Requirements for each secondary major can be found in the Secondary Majors section of this catalog.

Unrestricted electives **0–7**

Total hours for graduation **120**

*Students may satisfy requirements for the secondary major with courses used concurrently to meet humanities, social science, and professional/supporting course requirements.

Foods and nutrition courses

◆**FN 132. Basic Nutrition.** (3) I, II, S. Concepts of human nutrition applied to personal food choices and health.

FN 201. Dimensions of Eating. (3) II. Eating as a part of human behavior from a social, behavioral, economic, and global perspective; issues affecting food supply, food choices, and nutrition.

FN 301. Food Trends, Legislation, and Regulation. (3) II. Food laws, regulation, labeling, additives, and residues. Current trends in market forms, packaging, and utilization of various foods.

FN 352. Personal Health. (3) I. Impact of individual lifestyle, environment, psychosocial and biological factors, and the health care system on human health. Emphasis on health promotion and disease prevention at the individual and public levels. Pr.: Sophomore standing.

FN 400. Human Nutrition. (3) I, II. Sources and roles of nutrients and their importance to human health; the influences of age, gender, and physiological status on nutrient requirements. Pr.: CHM 110 and 111 or 210; BIOL 198.

FN 413. Science of Food. (4) I. Chemical, physical, sensory, and nutritional properties of food related to processes used in food preparation. Two hours rec. and six hours lab a week. Pr.: CHM 210 and 230.

FN 450. Nutritional Assessment. (2) II. Methods of nutritional assessment in humans to evaluate dietary intake and body composition; use of biologic markers of human nutritional status. One hour lec. and two hours lab a week. Pr.: FN 400; BIOL 240. For FN and DT majors only.

FN 499. Problem in Foods and Nutrition. (Var.) I, II, S. Supervised individual project to study current topics or participation in research in foods and nutrition. Pr.: Six hours in FN and consent of instructor.

FN 500. Public Health Nutrition. (3) I. Public health nutrition issues for various segments of the population; nutritional components of community assessment, program planning, and evaluation; and policy issues pertaining to the nutritional status of the population. Pr.: FN 450.

FN 501. Food Science: Chemistry and Applications. (3) II. Composition, structure and properties of foods. Chemical interactions affecting texture, color, flavor, and stability during processing and storage. Two hours rec. and three hours lab a week. Pr.: FN 413; CHM 350 and 351; BIOCH 521 and BIOCH 522.

FN 503. Maternal and Child Nutrition. (2–3) II. A study of the principles of prenatal, infant, and child nutrition emphasizing the practical application to life situations. Pr.: FN 132 and BIOL 198.

FN 520. Topics in Foods and Nutrition. (1–3) On sufficient demand. May be taken more than once for a maximum of 6 hours. Pr.: Junior standing and consent of instructor.

FN 550. Nutrient Metabolism. (4) I. Basic concepts of the mechanisms of actions, interactions, and the processes of cellular assimilation and utilization of nutrients in humans. Emphasis on the coordinated control of nutrient utilization among the major organs. Pr.: FN 400; BIOL 240 or 526; BIOCH 521.

FN 603. Food Science Internship. (1–6) I, II, S. Supervised professional field experience in foods science. Also see ASI 603.

FN 610. Life Span Nutrition. (3) I. Physiological and environmental influences on nutritional requirements; nutritional problems and eating patterns of age groups throughout the life cycle. Pr.: BIOCH 265 or 365; BIOL 240 or 526; and FN 400.

FN 630. Clinical Nutrition. (5) II. Nutrition in disease including physiological and biochemical basis of nutritional care, effects of disease on nutrient metabolism, diet therapy, nutritional assessment and nutrition counseling. Pr.: FN 550.

FN 635. Nutrition and Exercise. (3) II. The interrelationships among diet. nutrition, and exercise. Topics covered include physical fitness, weight control, nutrient metabolism during exercise, and athletic performance. Pr.: FN 132 or 400; BIOCH 265 or 365; and KIN 335. Cross-listed with College of Arts and Sciences; see KIN 635.

FN 650. Practicum in Nutrition. (Var.) I, II, S. Supervised professional field experience in nutrition. Pr.: FN 450 and 500 and consent of instructor.

FN 660. Nutrition and Food Behavior. (3) I, in even years. Focus on the physiological, environmental, cultural, and economic factors that influence the use of food. Identification of appropriate methodology to study these factors as well as programs to modify food behavior. Pr.: PSYCH 110 or SOCIO 211 or ANTH 200; and FN 400.

FN 690. Principles of HACCP. (1) II. Introduction to the Hazard Analysis and Critical Control Point system and its applications in the food industry. Three hours lec., four hours working groups, and one hour rec. per week for a three week period. Pr.: CHM 110 and BIOL 198. Cross listed with ASI 690.

FN 691. Senior Project. (1–2) Development of an independent food science project emphasizing physical, chemical, and sensory analytical skills. Pr.: FN 701.

FN 701. Sensory Analysis of Foods. (2–3) I. Sensory analysis of food appearance, texture, aroma, flavor; physiology of sensory receptors; laboratory and consumer panels; and interpretation of data. One hour rec. and three to six hours lab a week. Pr.: FN 501 or ASI 411.

FN 702. Nutrition in Developing Countries. (3) I, in odd years. Nutritional problems in developing countries, including an analysis of factors which contribute to malnutrition, effects of undernutrition, methods for assessing nutritional status, and interventions to combat nutrition problems. Pr.: FN 503 or 610.

FN 705. Food Product Development. (3) II. Development of food products including concepts, feasibility, formulation, evaluation, and production. One hour lec. and six hours lab a week. Pr.: FN 701.

FN 718. Physical Health and Aging. (3) I, alternate odd years. Focus is on the physiological theories of aging, the relationship between normal aging processes, and the major chronic and acute diseases of the elderly, and community health promotion/maintenance programs for older adults. Pr.: BIOL 198 or 310; FSHS 510.

FN 727. Physical Methods of Food Analysis. (2) I. Principles of physical and chemical methods and instrumentation for measuring protein, fat, moisture, and ash content. Determination of fat and oil quality characteristics. Physical measurements of food properties: color, water activity, water holding capacity, textural characteristics. Determination of properties and stability of emulsions, foams, and gels. One hour rec. and three hours lab a week. Pr.: FN 501 or ASI 502.

FN 741. Consumer Response Evaluation. (3) II, odd years. Evaluating consumer attitudes and perceptions of products to provide quantitative and qualitative information for research guidance. Design and implementation of consumer questionnaires and development of guides for focus groups and interviews. Two hours lec. and four hours lab a week. Pr.: FN 400 or 501 or permission of the instructor.

FN 750. Nutritional Aspects of Food Processing and Preparation. (2–3) I. In alternate years. Stability of nutrients during processing, storage, and preparation of foods from raw food to products for human consumption. Pr.: FN 400, 501; and BIOCH 265 or 521.

FN 780. Problems in Foods and Nutrition. (Var.) I, II, S. Laboratory and library experience in current problems in foods and nutrition. Three hours lab a week for each hour of credit. Pr.: FN 400 or 501.

FN 782. Topics in Foods and Nutrition. (1–3) On sufficient demand. May be taken more than once for a maximum of 6 hours. Pr.: Senior standing and consent of instructor.

FN 789. Advanced Application of HACCP Principles in the Food Industry. (1) II. Analysis of physical, chemical, and biological hazards in food products and application in developing HACCP plans for the food industry. Three hours lec., four hours working groups, one hour rec. for a three-week period. Pr.: BIOL 455 and FN 690 or ASI 690.

FN 792. Advanced Principles of Hazard Analysis and Risk Assessment. (1) II. Application of the principles of hazard analysis and risk assessment in the HACCP system. Three hours lec., two hours working groups, one hour rec. for a three-week period. Pr.: BIOL 455 and FN 690 or ASI 690. Cross-listed with ASI 792.

FN 793. Validation of HACCP Plans. (1) II. Evaluation of control parameters and control methods in identifying HACCP critical control points and validating the effectiveness of critical control points, critical limits, monitoring tools, corrective action procedure, recordkeeping, and verification procedures in addressing biological, chemical, and physical hazards that may be present in food products. Pr.: BIOL 455 and FN 690 or ASI 690. Cross-listed ASI 793.

FN 794. HACCP and Food Inspection. (1) II. Application of the principles of the hazard analysis and critical control point system to the inspection of food products. Three hours lec., two hours working groups, one hour rec. Pr.: BIOL 455 and FN 690 or ASI 690.

General Human Ecology

Professors Moxley and Stowe; Instructors Pence and Sego.

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http://www.ksu.edu/humec/

General human ecology programs prepare students for careers in education, extension, and communication.

General human ecology

Bachelor of science in human ecology

Degree programs in general human ecology allow students to integrate knowledge for an understanding of human needs, environments, and relationships. In the freshman and sophomore years, the general program allows flexibility in course selection for students who are undecided but interested in programs offered by the College of Human Ecology. Careful planning allows students to explore options while completing courses applicable to most programs.

General requirements (39–40 hours)

A minimum of 18 credits in approved university general education, 6 of which are upper-division (300-level or higher), must be completed.

Communications (8–9 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3

*Social sciences (6 hours)**

A course in economic systems		3
A course in human behavior		3

*Humanities (6 hours)**

Humanities electives		6

*Natural sciences (7 hours)**
(One course must include a laboratory.)

A course in life sciences		3–4
A course in physical science		3–4

*Quantitative studies (6 hours)**

MATH 100	College Algebra	3
	or	
A college-level calculus course		3
Any 3-hour introductory statistics course		3

Additional integrative studies (6 hours)

FSHS 350	Family Relationships and Gender Roles	3
A university general education elective course		3

*To ensure breadth in the general education experience, at least one approved university general education course must be completed in four of the following areas:

Economics
Social sciences
Humanities
Life sciences
Quantitative studies
A professional college

Professional studies (63 hours)
Human ecology courses (48 hours)

CT 330	Clothing and Society	3
	or	
CT 440	Apparel and Textile Product Evaluation	3
CT 265	Textiles	2
	and	
CT 266	Textiles Lab	1
FSHS 110	Introduction to Human Development	3
GNHE 310	Human Needs	3
FSHS 105	Introduction to Personal and Family Finance	3
	or	
FSHS 400	Family Economics	3
FSHS 550	The Family	3
	or	
FSHS 760	Family Decision Making	3
FSHS 670	Working with Parents	3
IDH 410	Housing and Its Environment	3
FN 132	Basic Nutrition	3
	or	
FN 400	Human Nutrition	3
FN 301	Food Trends, Legislation and Regulation	3
	or	
FN 413	Science of Food	4

Human ecology electives (17–18 hours from at least two departments)
Students seeking certification in family and consumer sciences education may apply 1–4 hours of specified EDSEC courses.*
Select in consultation with advisor.

Supporting courses (15 hours)
In consultation with advisor choose 15 hours, 300-level or higher, in areas other than human ecology.

Unrestricted electives	**17–18**
Total for graduation	**120**

*Students seeking certification in family and consumer sciences education must meet certification standards as well as degree requirements. See family and consumer sciences education certification requirements in this section of the catalog and the College of Education section of this catalog for more information.

Human ecology and mass communications

Bachelor of science in human ecology and mass communications

In this program students select areas of concentration in human ecology and mass communications according to their individual interests. In human ecology they may specialize in clothing, textiles, and interior design; family studies and human services; foods and nutrition; or hotel, restaurant, institution management and dietetics. In mass communications they may choose advertising, print or electronic journalism, public relations, or radio-television.

Except for the basic introductory courses of Mass Communication in Society, Principles of Advertising, Fundamentals of Public Relations, and Radio-TV and Society, which have no prerequisites, enrollment in courses in the School of Journalism and Mass Communications requires a minimum 2.5 GPA based on completion of at least 30 hours at the 100-level or above.

General requirements (42–43 hours)
A minimum of 18 credits in approved university general education, 6 of which are upper-division (300-level or higher), must be completed.
Communications (8–9 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3

*Social sciences (9 hours)**

A course in economic systems		3
A course in human behavior		3
MC 235	Mass Communication and Society	3

*Humanities (6 hours)**

Humanities electives		6

*Natural sciences (7 hours)**
(One course must include a laboratory.)

A course in life sciences		3–4
A course in physical science		3–4

*Quantitative studies (6 hours)**

MATH 100	College Algebra	3
	or	
A college-level calculus course		3
Any 3-hour introductory statistics course		3

Additional integrative studies (6 hours)

GNHE 310	Human Needs	3
	or	
FSHS 350	Family Relationships and Gender Roles	3
A university general education elective course		3

*To ensure breadth in the general education experience, at least one approved university general education course must be completed in four of the following areas:

Economics
Social sciences
Humanities
Life sciences
Quantitative studies (except MATH 100)
A professional college

Professional studies (72 hours)

Human ecology courses ***36***
Area of concentration in: CTID, FSHS, FN, or HRIMD (15 hours) selected in consultation with faculty advisor. At least two courses must be advanced (500 level or above, or require completion of a prerequisite course).

Human ecology electives (21 hours)
Selected in consultation with advisor, and including courses from at least two additional areas in human ecology.

Mass communications courses (36 hours)
A 2.5 cumulative GPA in MC courses is required to graduate.
In consultation with your advisor, select one of the options listed below:

1. Print journalism

MC 400	News and Feature Writing	3
MC 440	Editing and Design	3
MC 500	Advanced News and Feature Writing	3
MC 540	Advanced Editing and Design	3
MC 565	Law of Mass Communications	3
MC 595	Mass Communication Research	3

Select one of the following:

MC 535	Photojournalism	3
MC 600	Public Affairs Reporting	3

Select one of the following:

MC 650	Newspaper Management	3
MC 710	History of Journalism	3
MC 720	Ethics in Mass Communications	3
MC 730	Seminar in Future of the Media	3

MC electives*	12

At least 3 hours must be at the 500 level or above.

2. Electronic journalism

MC 400	News and Feature Writing	3
MC 500	Advanced News and Feature Writing	3
MC 505	Electronic News Reporting	3
MC 565	Law of Mass Communications	3
MC 585	Advanced Electronic News Reporting	3
MC 595	Mass Communication Research	3

Select one of the following:

MC 550	Journalism Internship	3
MC 570	Audio Techniques	3
MC 580	Video Techniques	3
MC 600	Public Affairs Reporting	3

Select one of the following:

MC 685	Electronic Media Management	3
MC 715	History of Electronic Media	3
MC 720	Ethics in Mass Communications	3
MC 730	Seminar in Future of the Media	3

MC electives*	12

At least 3 hours must be at the 500 level or above.

3. Advertising

MC 320	Principles of Advertising	3
MC 420	Advertising Writing	3
MC 545	Advertising Media Planning	3
MC 555	Advertising Techniques	3
MC 565	Law of Mass Communications	3
MC 595	Mass Communication Research	3
MC 640	Advertising Campaigns	3

Select one of the following:

MC 520	Newspaper Advertising Sales	3
MC 525	Electronic Media Advertising Sales	3

MC electives*	12

At least 3 hours must be at the 500 level or above.

4. Public relations

MC 325	Fundamentals of Public Relations	3
MC 400	News and Feature Writing	3
MC 440	Editing and Design	3
MC 445	Public Relations Writing	3
MC 550	Public Relations Internship	1–3
MC 565	Law of Mass Communications	3
MC 595	Mass Communication Research	3
MC 635	Public Relations Techniques	3
MC 645	Public Relations Campaigns	3

MC electives*	9–11

At least 3 hours must be at the 500 level or above.

5. Radio-television

MC 410	Writing for the Electronic Media	3
MC 475	Concepts of Electronic Media Production	3
MC 490	Junior Seminar in Electronic Media	3
MC 550	Radio-TV Internship	1–3
MC 565	Law of Mass Communications	3
MC 595	Mass Communication Research	3

Select one of the following:

MC 570	Audio Techniques	3
MC 575	Multimedia Techniques	3
MC 580	Video Techniques	3

Select one of the following:

MC 525	Electronic Media Advertising Sales	3
MC 655	Electronic Media Programming	3
MC 685	Electronic Media Management	3

MC electives*	12–14

At least 3 hours must be at the 500 level or above.

*The human ecology and mass communications degree allows application of a *maximum* of 39 credits in mass communications (MC) courses, including MC 235 taken as a general requirement.

Unrestricted electives	**5–6**
Total for graduation	**120**

Family and consumer sciences education certification requirements

Bachelor of science in human ecology

This program provides students with the skills and knowledge necessary to deliver family and consumer sciences education to diverse populations in various settings. Graduates of the program work in secondary schools, vocational education programs, cooperative extension, business, and industry.

Upon successful completion of the teacher education program and the National Teacher Examination, graduates are eligible for certification to teach family and consumer sciences in Kansas schools. See the College of Education section of this catalog for more information on eligibility requirements, admission to teacher education and admission to student teaching. Inquiries should be directed to the Center for Student and Professional Services, 13 Bluemont Hall.

General requirements (51–56 hours)

Communications (8–9 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3

Social sciences (9 hours)

ECON 110	Principles of Macroeconomics	3
ANTH 200	Introduction to Cultural Anthropology	3
	or	
ANTH 204	Introduction to Cultural Anthropology	3
History		3

Humanities (9 hours)

ART 100	2D Design	3
Literature (any literature course except ENGL 355 or 545)		3
Humanities elective (ENGL 230, 231, 233, or 234)		3
	or	
Any philosophy course except PHILO 110 or 220		3
	or	
Any modern language course		3

Natural sciences (13–17 hours)

BIOL 198	Principles of Biology	4
CHM 110	General Chemistry	3
	and	
BIOCH 265	Introductory Organic and Biochemistry	5
	and	
CHM 111	General Chemistry Lab	1
	or	
CHM 210	Chemistry I	4
	and	
CHM 230	Chemistry II	4
	and	
CHM 350	General Organic Chemistry	3
	and	
CHM 351	General Organic Chemistry Lab	2

Quantitative studies (6 hours)

MATH 100	College Algebra	3
	or	
College-level calculus course		3
STAT 330	Elements of Statistics for Social Science	3
	or	
Higher level statistics course		3

Additional integrative studies (6 hours)

FSHS 350	Family Relationships and Gender Roles	3
PSYCH 110	General Psychology	3

Professional studies (78 hours)

Human ecology (38 hours)

CT 265	Textiles	2
	and	
CT 266	Textiles Lab	1
CT 440	Apparel and Textile Product Evaluation	3
FN 400	Human Nutrition	3
FN 413	Science of Food	4
FSHS 105	Introduction to Personal and Family Finance	3
FSHS 302	You and Your Sexuality	3
FSHS 310	Early Childhood	3
FSHS 313	Preschool Child Lab	1
FSHS 670	Working with Parents	3
FSHS 760	Family Decision Making	3
GNHE 310	Human Needs	3
IDH 410	Housing and Its Environment	3
IDH 440	Home Appliance Design and Evaluation	3

Professional education courses (40 hours)

DED 102	Teaching as a Career*	1
FSHS 110	Introduction to Human Development*	3
EDCEP 315	Educational Psychology**	3
EDSP 323	Exceptional Students in the Secondary School**	2
EDSEC 376	Core Teaching Skills and Lab**	3
EDSEC 420	Block II Lab**	1
EDSEC 476	Content Area Methods in the Secondary School: Family and Consumer Sciences**	2
EDSEC 477	Middle Level/Secondary Reading**	2
EDSEC 621	Program Planning in Vocational Education**	2
EDCIP 455	Teaching in a Multicultural Society**	1
EDCEP 525	Interpersonal Relations in the School**	1
EDSEC 586	Teaching Participation in the Secondary School and Professional Development Seminar**	12
EDSEC 620	Principles and Philosophy of Vocational Education	3
EDETC 318	Instructional Media and Technology*	2
EDSEC 710	Occupational Family and Consumer Sciences*	2

*These are the only professional education courses which can be taken prior to admission to teacher education.

**These courses are blocked in three sequential semesters; courses in each block are to be taken concurrently and are prerequisites to the subsequent designated block of courses.

General human ecology courses

GNHE 208. Human Ecology Colloquium. (Var.) I, II, S. Special topics for human ecology majors.

◆**GNHE 310. Human Needs.** (3) I, II. Examination of theories of human needs from a human ecological perspective, with emphasis on the impact of human, economic, and material resources. Analysis of developmental, ethical, cultural, and public policy factors that influence need satisfaction. Pr.: Sophomore standing or consent of instructor.

GNHE 385. Problems in General Human Ecology. (Var.) I, II, S. Independent study. Pr.: Consent of instructor.

GNHE 399. Honors Seminar in Human Ecology. (1) I, II. Selected topics in human ecology. May be taken more than once for credit. For students in honors program only.

GNHE 780. Problems in General Human Ecology. (Var.) I, II, S. Individual investigation into work in general human ecology. Pr.: Consent of instructor.

Hotel, Restaurant, Institution Management and Dietetics

Judy Miller,* Head

Professors Canter,* Miller* and Shanklin;* Associate Professor Gould;* Assistant Professors Barrett* and Boger;* Instructors Pesci and Schalles; Emerita: Professor Spears;* Associate Professors Riggs and Roach.*

785-532-5521
Fax: 785-532-5522
http://www.ksu.edu/humec/hrimd/hrimd.htm

The programs in the Department of Hotel, Restaurant, Institution Management and Dietetics prepare students to enter the professions of hotel and restaurant management, foodservice management, and dietetics.

The department offers a bachelor of science degree in dietetics and a bachelor of science degree in hotel and restaurant management. Two programs, the coordinated program in dietetics and general dietetics, lead to the bachelor of science degree in dietetics.

Coordinated program in dietetics

Program I

Students complete preprofessional study during the freshman and sophomore years, and apply for formal admission into the program three semesters before the anticipated date of graduation. The coordinated program prepares students for the dietetics profession by integrating course work with 900 hours of supervised practice experiences. Graduates are eligible for active membership in The American Dietetic Association and, upon passing a national qualifying examination, for registration as a dietitian (R.D.). The program is accredited by The American Dietetic Association Commission on Accreditation/Approval for Dietetics Education, a specialized accrediting body recognized by United States Department of Education.

Junior and senior students gain foodservice management experience in Housing and Dining Services, the K-State Student Union Foodservice, and community food service operations. Seniors also spend one semester in area health care facilities where they work directly with practicing dietitians in clinical and community nutrition practice settings.

Application for admission to the coordinated program in dietetics should occur three semesters before the anticipated date of graduation. Criteria for admission are:

An overall minimum grade point average of 2.75 on a 4.0 scale, with no grade lower than C in the physical and biological sciences, or in professional courses (FN or HRIMD);

400 hours of dietetics-related work experience (either paid or volunteer);

A completed application packet;

A completed recommendation form from an employer or other person well acquainted with the applicant;

And an interview with the dietetics admission committee, to be scheduled by the applicant on the appointed interview day.

Ongoing evaluation of the student's didactic and performance-based learning is an important component in the coordinated program in dietetics.

Criteria for progression to the senior year are:

An overall minimum grade point average of 2.75, with no grade lower than C in professional and supporting courses.

Recommendation of the student by faculty teaching the junior-level professional courses.

General dietetics

Program II

The program in general dietetics is approved by The American Dietetic Association Commission on Accreditation/Approval for Dietetics Education as a Didactic Program in Dietetics. Completion of the program meets the academic requirements for membership in the American Dietetic Association.

Supervised practice experience, required for eligibility to take the national R.D. exam, must be obtained by the student after graduation through a dietetic internship or approved pre-professional practice program.

Dietetics

Bachelor of science in dietetics

Two programs are available in dietetics: Program I is the coordinated program in dietetics, and Program II is in general dietetics. See information earlier in this section.

General studies courses (67–69 hours)

Communications (8–9 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3

Social sciences (9 hours)

ECON 110	Principles of Macroeconomics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3

Natural sciences (29–30 hours)

BIOL 198	Principles of Biology	4
BIOL 240	Structure and Function of the Human Body	8
HRIMD 220	Environmental Issues in Hospitality	3
	or	
BIOL 455	General Microbiology	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
BIOCH 351	General Biochemistry	3

Quantitative studies (9 hours)

MATH 100	College Algebra	3
	or	
	College-level calculus	
CIS 101	Introduction to Information Technology	1
CIS 102	Information Technology: Spreadsheet Applications	1
	or	
CIS 103	Information Technology: Database Applications	1
CIS 104	Information Technology: Word Processing Applications	1
STAT 320	Elements of Statistics	3
	or	
STAT 330	Elements of Statistics for the Social Sciences	3
	or	
STAT 340	Biometrics I	3
	or	
STAT 350	Business and Economic Statistics I	3

Humanities electives (6 hours)

Integrative studies (6 hours)

GNHE 310	Human Needs	3
	or	
FSHS 350	Family Relationships and Gender Roles	3
ACCTG 231	Accounting for Business Operations	3

Choose one of the professional programs: I, II.

Program I: Coordinated program in dietetics
Professional courses (55 hours)

FN 400	Human Nutrition	3
FN 413	Science of Food	4
FN 450	Nutritional Assessment	2
FN 500	Public Health Nutrition	3
FN 550	Nutrient Metabolism	3
FN 610	Life Span Nutrition	3
FN 630	Clinical Nutrition	5
HRIMD 130	Introduction to Professional Dietetic Practice	1
HRIMD 341	Principles of Food Production Management	3
HRIMD 342	Food Production Management	3
HRIMD 455	Foodservice Systems	4
HRIMD 515	Counseling Strategies in Dietetic Practice	3

Management semester

HRIMD 560	Management in Dietetics	3
HRIMD 561	Management in Dietetics Practicum	6

Clinical semester

HRIMD 520	Applied Clinical Dietetics	3
HRIMD 521	Clinical Dietetic Practicum	6

Unrestricted electives	**1–3**
Total hours for graduation	**125**

Program II: General dietetics
Professional courses (40 hours)

FN 400	Human Nutrition	3
FN 413	Science of Food	4
FN 450	Nutritional Assessment	2
FN 500	Public Health Nutrition	3
FN 550	Nutrient Metabolism	3
FN 610	Life Span Nutrition	3
FN 630	Clinical Nutrition	5
HRIMD 130	Introduction to Professional Dietetic Practice	1
HRIMD 341	Principles of Food Production Management	3
HRIMD 342	Food Production Management	3
HRIMD 445	Organization and Management of Foodservice Operations	3
HRIMD 476	Cost Controls in Hotel and Restaurant Operations	3
HRIMD 515	Counseling Strategies in Dietetic Practice	3

Unrestricted electives	**16–18**
Total hours for graduation	**125**

Distance education in dietetics

Professional courses in both dietetics options may be taken through the Division of Continuing Education using a variety of technologies. Course development is ongoing. For further information, contact the Department of Hotel, Restaurant, Institution Management and Dietetics at 785-532-5521 (*http://www.ksu.edu/humec/hrimd/hrimd.htm*) or the Division of Continuing Education at 785-532-5566 (*http://www.dce.ksu.edu/*).

Hotel and restaurant management

Bachelor of science in hotel and restaurant management

The hotel and restaurant management program has been accredited by the Accreditation Commission for Programs in Hospitality Administration.

The mission of the program is to prepare students for professional careers in hospitality management by providing theory-based instruction and practical experience.

The program provides students with a broad liberal education, an understanding of business administration (business minor), a solid foundation of professional courses in both hotel and foodservice operations, and hands-on experience in the hospitality industry. Students are required to complete 400 hours of work experience in the hotel or restaurant industry prior to a 400-hour field experience for academic credit.

Students apply concepts learned in the classroom to actual work situations. On-campus facilities include a quantity food production laboratory, Housing and Dining Services, and the K-State Student Union foodservices. Students gain valuable experience in commercial properties under the supervision of managers and faculty supervisors.

The hotel and restaurant management program prepares students for managerial careers in the hospitality industry. See information earlier in this section.

General studies courses (49–52 hours)

Communications (8–9 hours)

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
ENGL 516	Written Communications for Sciences	3

Quantitative studies (9 hours)

MATH 100	College Algebra	3
	or	
	College-level calculus	
CIS 101	Information Technology	1

Select two of the following:

CIS 102	Information Technology: Spreadsheet Applications	1

CIS 103	Information Technology: Database Applications	1
CIS 104	Information Technology: Word Processing Applications	1
STAT 350	Business and Economic Statistics I	3

Social sciences (9 hours)

PSYCH 110	General Psychology	3
	or	
SOCIO 211	Introduction to Sociology	3
ECON 110	Principles of Macroeconomics	3
ECON 120	Principles of Microeconomics	3

Humanities (minimum 7–8 hours)

Foreign language elective		4
Humanities elective		8

Natural sciences (10–11 hours)

Physical science elective		3–4
BIOL 198	Principles of Biology	4
FN 132	Basic Nutrition	3

Integrative studies (3 hours)

GNHE 310	Human Needs	3
	or	
FSHS 350	Family Relationships and Gender Roles	3

Professional courses (35 hours)

ASI 302	Introduction to Food Science	3
HRIMD 120	Survey of the Hospitality Industry	1
HRIMD 220	Environmental Issues in Hospitality	3
HRIMD 221	Topics in Hospitality	1
HRIMD 341	Principles of Food Production Management	3
HRIMD 342	Food Production Management	3
HRIMD 361	Principles of Lodging Operations	2
HRIMD 362	Lodging Practicum	1
HRIMD 421	Hospitality Service Systems	3
HRIMD 422	Cost Controls in Hospitality Operations	3
HRIMD 475	Field Experience in Hotel, Restaurant Management, and Dietetics	3
HRIMD 621	Hospitality Law	3
HRIMD 664	Lodging Management Theory	3
MANGT 531	Personnel and Human Resource Management	3
	or	
PSYCH 560	Industrial Psychology	3

Professional electives (12 hours)

8–9 hours minimum in HRIMD

Select from the following:

HRIMD 230	Issues in Tourism	2
HRIMD 340	Contemporary Issues: Controlled Beverages	2
HRIMD 423	Facilities Planning and Risk Management	3
HRIMD 424	Hospitality Marketing and Sales	3
HRIMD 425	Current Issues in Hospitality and Dietetics	2
HRIMD 463	Convention Services and Meeting Planning	2
HRIMD 624	Procurement in the Hospitality Industry	2
HRIMD 640	Consultation in Hotel, Restaurant Management and Dietetics	3
HRIMD 665	Gaming Management	2
ASI 671	Meat Selection and Utilization	2
MANGT 390	Business Law	3
MANGT 520	Organization Behavior	3
MANGT 530	Industrial and Labor Relations	3
MANGT 550	Organizational Training and Development	3
MANGT 595	Business Strategy	3
MANGT 623	Compensation Management	3
MKTIB 450	Consumer Behavior	3
MKTIB 543	Promotional Strategy	3
MKTIB 544	International Marketing	3
SOCIO 570	Race and Ethnic Relations in Workplace	3
GEOG 300	Geography of Tourism	3
IMSE 632	Industrial Ergonomics	3
GERON 315	Introduction to Gerontology	3

Business supporting courses (15 hours)

ACCTG 231	Accounting for Business Operations*	3
ACCTG 241	Accounting for Investing and Financing*	3
MKTIB 400	Marketing*	3
MANGT 420	Management Concepts*	3
FINAN 450	Introduction to Finance	3

*required for business minor

Unrestricted electives 6–9

Total for graduation 120

Hotel, restaurant, institution management and dietetics courses

HRIMD 120. Survey of Hospitality Industry. (1) I. Overview of the hospitality industry. Survey of the history, scope, trends, and career opportunities that comprise the four segments of the industry: food service, lodging, travel and tourism, and meeting and convention planning.

HRIMD 130. Introduction to Professional Dietetic Practice. (1) I. A survey of career opportunities in dietetic practice. Discussion of characteristics and skills needed for success; routes to becoming a registered dietitian.

HRIMD 220. Environmental Issues in Hospitality. (3) I. Principles of foodborne disease function and transmission, bloodborne pathogens, Hazard Analysis Critical Control Point (HACCP) system, conservation of natural resources, solid waste management, air quality, safety, and governmental regulations in the hospitality industry. Pr.: HRIMD 120 or conc. enrollment, or consent of instructor; and BIOL 198.

HRIMD 221. Topics in Hospitality. (1) II. An introduction to professional challenges in the hospitality industry. Development of professional skills as they relate to hospitality including leadership, change management, time management, diversity issues, business etiquette, and ethics. Pr.: HRIMD 120, major in HRM.

HRIMD 230. Issues in Tourism. (2) II. Social, legislative, environmental, economic, and technological issues that impact the development and maintenance of a destination. Includes traveler needs and safety and rural tourism ventures.

HRIMD 340. Contemporary Issues: Controlled Beverages. (2) I. The study of historic, social, ethical, physiological, and legal issues relating to alcoholic beverage service and use in contemporary America with emphasis on responsible and knowledgeable service of beer, wine, and spirits in hospitality operations. Pr.: PSYCH 110 or SOCIO 211.

HRIMD 341. Principles of Food Production Management. (3) I, II. Basic principles and theories of foodservice systems; menu planning; development, standardization, adjustment, and costing of quantity recipes; procurement and production of quality food; foodservice computer applications. Pr.: HRIMD 220 or conc. enrollment, ASI 302 or conc. enrollment, or FN 413 (dietetic students).

HRIMD 342. Food Production Management. (3) I, II. Application and principles of food production that includes procurement, quantity food production and controls, work simplification, food service systems, quality food; commercial equipment use, and Hazard Analysis Critical Control Point (HACCP) system. Two hours lec., 4 hours lab. Pr.: HRIMD 341.

HRIMD 361. Principles of Lodging Operations. (2) I. Operational theory of lodging and an exploration of the lodging industry in terms of the nature of work, organizational structure of lodging segments, and evaluation of the market place. Pr.: HRIMD 220, 221, and sophomore standing.

HRIMD 362. Lodging Practicum. (1) I, II. Supervised experiences in housekeeping, maintenance and other operational areas in a lodging property. Forty hours of practicum experience within an assigned property. Pr.: HRIMD 361 or conc. enrollment.

HRIMD 421. Hospitality Service Systems. (3) I, II. Examination of the complexities of quality and service within all segments of the hospitality industry. Focus on developing problem solving skills, process management skills, work methods, team development skills, and evaluation of service systems. Two hours lec., 2 hours lab. Pr.: HRIMD 342.

HRIMD 422. Cost Controls in Hospitality Operations. (3) I. Application accounting principles to analyze control measures used in lodging and commercial and noncommercial foodservice operations. Pr.: ACCTG 241.

HRIMD 423. Facilities Planning and Risk Management. (3) I. Evaluation and selection of equipment, maintenance contracts, layout and design of hospitality operations, facility renovation, and selection of consultants. Assessment of safety and security measures and development of risk management programs to increase guest/customer safety. Pr.: HRIMD 342, 362.

HRIMD 424. Hospitality Marketing and Sales. (3) I. Application of marketing principles to lodging, foodservice, and tourism industry through analysis of marketing mix, marketing strategies, and sales techniques. Pr.: MKTIB 400.

HRIMD 425. Current Issues in Hospitality and Dietetics. (1–3) I, II, S. In-depth analysis of issues within hospitality and dietetics. Pr.: HRIMD 342, 362.

HRIMD 445. Organization and Management of Foodservice Operations. (3) II, in alternate years. The application of management concepts and theories, financial controls, quality assurance, legislative issues, and research to foodservice operations. Pr.: HRIMD 342.

HRIMD 463. Convention Services and Meeting Planning. (2) I. Analysis of meeting planning from inception to delivery. Explores perspectives and responsibilities of the hotel staff and meeting planner. Pr.: HRIMD 362.

HRIMD 470. Seminar in Hotel and Restaurant Management. (1) Offered on demand. Current developments and trends in hotel and restaurant management. Pr.: HRIMD 361 and 421.

HRIMD 475. Field Experience in Hotel, Restaurant Management, and Dietetics. (1–3) I, II, S. Planned and supervised experience in a hotel, restaurant, or dietetic operation; minimum of 400 hours. Pr.: For HRM students: junior standing, HRIMD 421; and 400 hours of work experience in a hospitality operation, exclusive of course work; consent of program director.

HRIMD 480. Management in the Hotel and Restaurant Industry. (3) Offered on demand. Management of personnel and other resources in the hotel and restaurant industry. Emphasis on employee development and training. Pr.: HRIMD 361 or 421 and MANGT 420.

HRIMD 482. Employee Development for the Hospitality Industry. (3) I, II. Emphasizes the role of the hospitality manager and dietitian as facilitator, trainer, and motivator of employees. Focuses on the fundamentals of successful training and development of a service-oriented work force. Special attention is given to the unique problems associated with the labor intensive hospitality and foodservice industries. Pr.: HRIMD 342.

HRIMD 499. Problems in Hotel, Restaurant, Institution Management and Dietetics. (Var.) I, II, S. Independent study under the supervision of a faculty member. Pr.: Consent of instructor.

HRIMD 510. Introduction to Clinical Dietetics. (1) Offered on demand. Application of concepts and skills in clinical dietetics in a simulated practice environment. One hour rec. per week. Pr.: FN 400; BIOCH 265; and BIOL 240; and conc. enrollment in FN 630.

HRIMD 515. Counseling Strategies in Dietetic Practice (3) II. Application of interviewing, counseling, and educational techniques in dietetics, including individual and group methods. Three hours lec. per week. Pr.: PSYCH 110; FN 450 or conc. enrollment. Enrollment restricted to: dietetics majors, nonmajors completing ADA requirements, or consent of instructor.

HRIMD 520. Applied Clinical Dietetics. (3) I, II. Application of clinical nutrition principles through case studies, independent research, discussion, groups, and oral presentations. Case studies will focus on medical nutrition therapy and education of persons throughout the life cycle and nutrition intervention for individuals with multiple disease states in various healthcare settings. Pr.: FN 500 and 630; and admission to the coordinated program in dietetics.

HRIMD 521. Clinical Dietetic Practicum. (1–6) I, II. Supervised clinical/community experience in the nutritional care of patients/clients. Practicum experiences are arranged with participating healthcare facilities. Successful completion of 6 credit hours of Clinical Dietetics Practicum is required in the coordinated program in dietetics. Consent of instructor is required for enrollment in fewer than 6 credit hours per semester. May be repeated for a maximum of 6 credit hours. Pr.: FN 500 and 630; HRIMD 515; must be taken conc. with or following HRIMD 520; and admission to the coordinated program in dietetics.

HRIMD 560. Management in Dietetics. (3) I, II. Functions of management in dietetic practice. Financial control, policy making, inter- and intradepartmental relationships, personnel issues, use of TQM and other quality assurance mechanisms. Pr.: HRIMD 421; ACCTG 231.

HRIMD 561. Management in Dietetics Practicum. (6) I, II. Supervised practice experience in the application of management principles in foodservice operations or other dietetics practice settings. Pr.: HRIMD 421; ACCTG 231 and admission to the coordinated program in dietetics and previous or concurrent enrollment in HRIMD 560.

HRIMD 570. Seminar in Hotel, Restaurant Management and Dietetics. (1) I, II. Current trends, research, and developments in hotel and restaurant management and dietetics. Pr.: Senior standing in hotel/restaurant management or dietetics programs.

HRIMD 621. Hospitality Law. (3) II. Legal aspects of managing hospitality operations and responsibilities for the operations, patron civil rights, governmental regulations, franchising, and commercial transactions. Pr.: HRIMD 342, 362.

HRIMD 624. Procurement in the Hospitality Industry. (2) I. Principles and theories of procurement of food and supplies for hospitality operations. Includes management, financial, safety, and ethical considerations in the procurement process. Pr.: HRIMD 342.

HRIMD 635. Foodservice Equipment and Layout. (2) I, II. Factors affecting the selection and arrangement of equipment in foodservice systems. Field trip required. Pr.: HRIMD 342.

HRIMD 640. Consultation in Hotel/Restaurant Management and Dietetics. (3) On sufficient demand. Development and management of small businesses or private practice within the dietetics or hospitality industry. Business plan development, marketing, cost considerations. Overview of consulting to healthcare and hospitality operations and examination of skills required for success. Pr.: HRIMD 342, ACCTG 231.

HRIMD 664. Lodging Management Theory. (3) II. Application of management theories to the lodging industry including yield management, multicultural issues, marketing strategies, environmental issues, and future trends. Pr.: HRIMD 362.

HRIMD 665. Gaming Management. (2) On sufficient demand. Investigation of the impact of gaming on the foodservice and hospitality industry from the social, economical, political, and environmental perspectives. Pr.: HRIMD 362, MANGT 420.

HRIMD 705. Computer Implementation in Foodservice and Hospitality Operations. (3) S. In alternate years. Review of computer development in foodservice and hospitality operations; development of criteria for implementation of a computer system; analysis of foodservice and hospitality hardware and software. Pr.: CIS 101; and HRIMD 480 or 560 or MANGT 420.

HRIMD 710. Readings in Foodservice and Hospitality Management. (1–3) I, II, S. Directed study of current literature in foodservice and hospitality management and related areas. Pr.: HRIMD 480 or 560 or MANGT 420.

HRIMD 720. Current Issues in Hotel, Restaurant, Institution Management and Dietetics. (1–3) Recent developments and concerns related to management of foodservice and hospitality operations. Pr.: HRIMD 440, 480 or 560 or MANGT 420.

HRIMD 785. Practicum in Foodservice Systems Management. (1–6) I, II, S. Professional experiences in approved foodservice organization as a member of the management team under faculty supervision. Pr. or conc.: HRIMD 342; and HRIMD 480 or 560 or MANGT 420.

Technology and Aviation

Dennis K. Kuhlman, Dean
Robert D. Homolka, Interim Associate Dean
Matthew Melvin, Assistant Dean/Director of College Advancement
2409 Scanlan Avenue
Salina, KS 67401
785-826-2600

K-State at Salina provides education of technicians and technologists in the fields of aviation, engineering technology, information technology, and science technology. The college also provides education or training in related technical or occupational fields.

K-State at Salina offers bachelor of science degrees in aeronautical technology, electronic engineering technology, land information technology, mechanical engineering technology, and technology management. The college offers associate of technology degrees in aviation maintenance, environmental engineering technology, civil engineering technology, computer engineering technology, computer information systems technology, computer science technology, electronic engineering technology, mechanical engineering technology, professional pilot, and surveying technology. In addition the college offers the associate of applied science degree in avionics and aviation maintenance, and a certificate in aviation maintenance.

Technology courses typically combine lecture and laboratory experiences. For most lab courses, the contact time is twice that of recitation courses.

Accreditation and certification

The Technology Accreditation Commission of the Accreditation Board for Engineering and Technology accredits the following degrees: civil engineering technology, computer engineering technology, electronic engineering technology, and mechanical engineering technology.

The aircraft maintenance program is certified as an "Aviation Maintenance Technician School No. BZ9T052R" by the Federal Aviation Administration.

Support services

K-State at Salina provides a number of support services on the Salina campus. Admissions, student financial assistance, registrar, and career services/placement personnel are available to assist students. These Salina offices function as extensions of the related university offices.

K-State at Salina has a new College Center that contains a kitchen, dining hall, bookstore, conference rooms, student government offices, and student services offices. The campus has two 100-bed residence halls, one of which opened in fall 1997. Health services are provided by a number of local clinics and physicians. Personal counseling is available through a local agency.

Cooperative education

The College of Technology and Aviation, through the co-op program, offers opportunities for students to obtain experience in industry as part of their college education. Students enroll through Career and Employment Services and are selected following formal interviews with participating companies. Once selected, students will be paid to work from two to five periods (semesters or summers) in positions related to their academic major or career objectives.

K-State at Salina library

The library, located in the Technology Center, meets standards set for college libraries by the American Library Association and TAC of ABET.

The library facilitates student learning; provides instructional support; increases effective communication; helps prepare students for the workplace; provides a place where people can meet, interact, and work; and assumes a leadership role on campus in both its own adoption of technology and in its influence on faculty attitudes about the use of technology. The library's "vision" is to provide quality service and universal access to multiple information resources in a variety of formats.

The library contains a collection of up-to-date technical information and reference materials covering a range of technological subjects. The library's subject strengths are computer science, information systems, aviation technology, mechanical engineering technology, civil engineering technology, environmental engineering technology, and electronic engineering technology.

The library houses general information and technical periodicals, newspapers, fiction books, a reading lounge, typewriters, computers, a copy center, a distance education studio/classroom, a library conference room, and an audio/visual resource center. Fax service is available. The library has approximately 11,000 square feet and seats 64 people.

Cyber-libraries of the future involve many technological advances and computers are the foundation. The library has access to a variety of databases including the Kansas Regents Network (KARENET), which allows computerized access to all Kansas Board of Regents libraries. A daily courier service provides customers with service to Regents libraries and other academic and public libraries. Internet access is available on all computers.

Continuing education/ media services

The Division of Continuing Education offers workshops, seminars, and short-term and full-term courses in the fields of technology.

Continuing education programs cover a variety of subjects for both occupational and personal use. Class schedules are set for the convenience of the students during both daytime and evening hours.

Special courses can be designed to meet the needs of individuals, groups, and organizations. These services can be provided on campus, in-plant, or in communities where technical services are needed but not readily available. Continuing education units may be granted in appropriate cases.

Media services

The Department of Media Services, operating as a continuing education unit, provides interactive television conferences (ITV), satellite downlinks, instruction on the use of mediated software programs, and mediated courseware development and production. Webpage assistance and maintenance are also provided. Audio and video production and editing, as well as checkout services for multimedia and video equipment, are the departments main activities. Media Services films and broadcasts several classes that are taught at Kansas State University–Salina. These courses, along with the educational bulletin board on channel 19, are televised through Salina community access television and are broadcast from the control room of Media Services ITV Center in the library.

University General Education Program

The College of Technology and Aviation requires each student to complete course work that fulfills the university general education requirements. The following information describes these requirements for associate and baccalaureate degree programs in the college.

Associate degrees

Degree requirements for students pursuing an associate degree in the College of Technology and Aviation include 6 credit hours of approved university general education courses. The minimum university general education requirements for the associate degree include:

Humanities and/or social science	3 credit hours
Natural science	3 credit hours

Students may take no university general education courses from within their major field of study.

Baccalaureate degrees

Degree requirements for students pursuing a baccalaureate degree in the College of Technology and Aviation include 18 credit hours of approved university general education courses, of which at least 6 credit hours are at the 300 level or above. The minimum general education requirements for the baccalaureate degree include:

Humanities and/or social science	9 credit hours
Natural science	3 credit hours
Unrestricted disciplines	6 credit hours

Students may take no more that six credit hours of university general education course work with the same course number prefix, and they may take no university general education courses from within their major field of study.

Policy for transfer students

Students entering Kansas State University transferring credit from accredited two-year or four-year institutions are required to complete a minimum number of university general education credit hours at K-State. The minimum number of university general education credit hours required is based upon total number of completed transfer credit hours accepted at K-State on the student's initial date of entry.

Associate degree programs

Number of completed transfer credit hours accepted at K-State on initial date of entry	Minimum university general education credit hours to be taken at K-State
0–14	6
15 and above	3

Baccalaureate degree programs

Number of completed transfer credit hours accepted at K-State on initial date of entry	Minimum university general education credit hours to be taken at K-State
0–14	18
15–29	15
30–44	12
45–59	9
60 and above	6

Each transfer student is required to complete a minimum of 6 credit hours of K-State upper-division university general education courses (300 and above) as specified in the program in which they will graduate.

Policy for curriculum changes

Students changing curricula within Kansas State University must satisfy the university general education requirements for the program in which they will graduate. Students entering a baccalaureate degree program after completing an associate degree at K-State are not considered to be transfer students, as far as the university general education requirements are concerned. These students must meet the university general education requirements for the baccalaureate curriculum that they are entering.

University general education course selection

University general education courses may overlay the degree requirements in a given curriculum, to satisfy concurrently both the accreditation criteria for that program and the university general education requirements. Refer to the latest college advising information for a complete list of approved university general education courses.

In course descriptions, university general education courses are marked with a ◆. The Degrees section at the front of this catalog lists other university general education courses. A list of currently offered university general education courses is available on the web at these addresses:

- http://www.ksu.edu/course/
- http://www.ksu.edu/educadv/

University general education courses taught in Salina

Humanities	
HIST 231	History of Technology
Social sciences	
ECON 110	Principles of Macroeconomics
ECON 120	Principles of Microeconomics
PSYCH 110	General Psychology
Natural science	
CHEM 110	General Chemistry
CHM 210	Chemistry I
CHM 230	Chemistry II
PHYS 100	The Physical World I
GEOL 100	Earth in Action
GEOL 103	Elementary Geology Lab
Other	
BUS 251	Financial Accounting
BUS 252	Managerial Accounting
SPCH 311	Business and Professional Speaking
STAT 320	Elements of Statistics
MKTG 400	Marketing

Arts, Sciences, and Business

Nancy Mosier, Interim Unit Administrator

Professors Ahlvers, Bingham, Heublein, and Homolka; Associate Professors Stephens and Thompson; Assistant Professors Barnes, Mosier, and Zajac.

Kansas State University at Salina programs are intended to provide students the opportunity to acquire sufficient specialization in the technical field of their choice and a general education background intended to enhance their common knowledge. Each curriculum requires general studies courses.

This department includes courses in business, developmental studies, English/communications, mathematics, science, social science, and humanities.

At the Salina campus, math placement will be determined by the ACT placement program COMPASS. COMPASS is a computerized testing program that will assess and assign the level of math course for students.

Business courses

BUS 110. Introduction to Business. (3) I, II, S. This course surveys the objectives, decisions, and activities within a business organization. Topics include a study of management responsibilities and controls, organizational structures, and marketing activities.

BUS 115. Supervisory Management. (3) I, II, S. An analysis of the responsibilities of the supervisor, with an examination of the skills and practices helpful in developing effective relations with people in a work setting.

BUS 121. Human Relations in Organizations. (2) I. Focuses on the many psychological and social pressures people experience when they interact with each other. Two hours rec. a week.

◆BUS 251. Financial Accounting. (3) I, II, S. Study of business topics such as alternative forms of business organizations; typical business practices; legal instruments such as notes, bonds, and stocks; and financial statements and analysis. The main objective is to develop the ability to provide information to stockholders, creditors, and others who are outside an organization.

◆BUS 252. Managerial Accounting. (3) I, II, S. This course outlines the use of internal accounting data by managers in directing the affairs of business and non-business organizations. Pr.: BUS 251.

BUS 253. Accounting Using Microcomputers. (3) I, II. This course covers material that will prepare the student to select, install, set up, and operate commercial accounting software packages. The hands-on approach is used. Students will learn to identify inputs, reports, periodic table updates, and data flow for accounting applications. The class will physically install, set up, and run a commercial accounting software package. Emphasis is on accounting using the microcomputer. Pr.: BUS 251.

MANGT 366. Management Information Systems. (3) I, II, S. A comprehensive view of the role of information technology in satisfying organizations' information requirements. Problems and technique concerning the management of responsive information systems with special attention to managers' use of systems outputs. Cases and hands-on exercises emphasizing the use of information systems in decision making, information gathering and organizing, use of modeling techniques, and presentation of information. Pr.: CMIS 105.

MANGT 390. Business Law I. (3) I, II. A study of law as it relates to business, including court procedures and systems, contracts, torts, agency and employment law, and business crimes. Pr.: Junior standing.

MANGT 420. Management Concepts. (3) I, II, S. Managing organizations through fundamental processes of developing plans, structuring work relationships, coordinating effort and activities, directing and motivating subordinates, and controlling. Also includes managerial roles and responsibilities, effective decision making, productivity improvement, and models and theories of human behavior. Pr.: Junior standing.

MANGT 421. Introduction to Operations Management. (3) I, II, S. Description and analysis of problems related to the output of goods and services, operations planning and control, and systems management. Pr.: MATH 205 or MATH 220 and STAT 320 or STAT 350.

MANGT 530. Industrial and Labor Relations. (3) I. Basic course in industrial and labor relations. Broad coverage of the institution of collective bargaining and its environment, the goals and operation of labor unions, the impact of unions on management, and labor relations law. Pr.: Junior standing.

MANGT 531. Personnel and Human Resources Management. (3) I, II. The personnel program and its operational processes of manpower planning, recruiting, testing, developing, and evaluating. Analysis of the personnel department's role in the organization with emphasis on problem solving. Pr.: MANGT 420.

◆**MKTG 400. Marketing.** (3) I, II, S. A general study of marketing principles which lead to the development of marketing strategy. A review of environmental influences and key analytical tools used in formulating marketing plans. Product or service design, distribution, pricing, and promotional programs. Pr.: ECON 110, 120, and junior standing.

College of Technology general courses

COT 010. College Study Skills. (1) I, II. This eight-week course is designed to aid the student who sees a need for, or is perceived to need, help or information which can augment his/her study skills in the following areas: note taking, time management, test-taking, reading comprehension, goal setting, and library use. May not be used toward a degree.

COT 011. College Life Skills. (1) I, II. This eight-week course is designed to aid the student in obtaining information covering personal issues such as communication, finance, and health. May not be used toward a degree.

COT 139. Emergency Medical Technician. (6) I, II. This course is designed to prepare students to take the state of Kansas EMT Certification exam.

COT 200. Utilization of Media. (3) Surveys the uses, theories, research, practices, programs, skills, and foundation of instructional technology. Principles are applicable to school, college, library, business, industry, organizational, and alternative learning settings. Three hours rec. a week.

COT 299. Problems in Arts, Sciences, and Business. (Var.) I, II, S. Opportunity for advanced independent study in specific subject areas in Department of Arts, Sciences, and Business. Subjects are selected by the student and the instructor. Pr.: Consent of instructor.

DED 051. Study Skills Laboratory. (1–3) I, II. Helps the student to learn effective study methods, analyze difficulties in reading and studying, and prepare for and improve performance in examinations.

English/communications courses

ENGL 080. Developmental English. (3) I, II. Basics of standard edited (written) English with emphasis on grammar, usage, and sentence structure. This course does not fulfill requirements for the associate degree. Three hours rec. a week.

ENGL 100. Expository Writing I. (3) I, II, S. Introduction to expressive and informative writing. Frequent discussions, workshops, and conferences. Offers extensive practice in the process of writing: getting ideas, drafting, analyzing drafts, revising, and editing.

ENGL 200. Expository Writing II. (3) I, II, S. Introduction to writing persuasively and in response to literature. As with ENGL 100, uses discussion, workshops, and conferences, and emphasizes the writing process. Pr.: ENGL 100 or 110.

ENGL 202. Technical Writing. (3) I, II, S. Technical Writing applies rhetorical skills to the special writing needs of business and industry. Special emphasis is placed on the writing process and audience analysis. Three hours rec. a week. Pr.: ENGL 100.

ENGL 251. Introduction to Literary Studies. (3) I, II, S. Study of form and technique in works of fiction, poetry, and drama.

ENGL 255. Literature and Technology. (3) Students will read literature about technology from a variety of perspectives including novels, short stories, articles, and excerpts from other types of writing. Three hours rec. a week. Pr.: ENGL 100.

MC 430. Photography I. (3). Basic camera and laboratory techniques of photography. Pr.: 2.5 GPA upon completion of 30 or more hours.

SPCH 105. Public Speaking IA. (2) I, II, S. Alternate to SPCH 106. Principles and practice of message preparation, audience analysis, presentational skills, and speech criticism. Primarily granted for students whose curricula require a 2-credit hour course. Credit not granted for both SPCH 105 and 106.

SPCH 106. Public Speaking I. (3) I, II, S. Principles and practice of message preparation, audience analysis, presentational skills, and speech criticism permitting greater practice in oral presentation. Credit not granted for both SPCH 105 and 106.

◆**SPCH 311. Business and Professional Speaking.** (3) I, II. Principles and practice of speaking in an organizational setting. Areas of emphasis will be oral reports, interviewing, interpersonal communication, and working in groups. Pr.: SPCH 105 or 106.

Geographic information systems courses

GIS 150. Introduction to GIS. (3) II. In this introductory course in geographic information systems the student will review hardware and software components, explore several applications, and be introduced to data structures and basic functions. The student will explore application issues in GIS; operational and management issues; and which issues to consider when proposing and implementing a new GIS. Hands-on experience will be gained using a commercial GIS software package (pc ARC/INFO) on a PC-based graphics workstation. Two hours rec. and two hours lab a week. Pr.: CMST 103.

GIS 252. Internship. (1) I, II, S. Student works during summer or regular semester as an intern in a GIS-related industry. A report detailing duties performed and tasks accomplished is required at the end of the internship period. (Recommended during summer before second year and during second year.) May be repeated for credit.

GIS 255. Operating a GIS. (2) I. This course covers the issues that must be addressed to successfully operate a geographic information system in a production environment. One hour rec. and two hours lab a week. Pr.: CMST 103 and GIS 150.

GIS 300. Problems in GIS. (Var.) I, II, S. A course in which advanced study is done in a specific area chosen by the student. Pr.: Consent of instructor.

GIS 350. Advanced Issues in GIS. (3) I. This course deals with GIS algorithms, data structures, advanced computational topics, analysis of error; ways in which traditional planning and management theories and techniques can be implemented in GIS; and evaluation of how GIS can be used to answer specific planning problems. Two hours rec. and two hours lab a week. Pr.: CMST 103 and GIS 150.

GIS 355. Projects in GIS. (2) I, II, S. In this course the class will take an example real-world geographic information systems project and complete the project, start to finish, using a GIS software package which they have learned to operate in a previous course. One hour rec. and two hours lab a week. Pr.: CMST 103 and GIS 150.

GIS 451. Georeferencing. (3) I. This course introduces spatial referencing concepts and global position systems (GPS) applications. A framework for spatial referencing is a necessary part of a geographic information system if different layers of information are to be interrelated. Two hours rec. and two hours lab a week. Pr.: MATH 100 and MATH 151 or MATH 150, CET 110 and CET 130.

Mathematics courses

MATH 010. Intermediate Algebra. (3) I, II, S. Review of elementary algebra: topics preparatory to MATH 100. Pr.: Two units of mathematics in grades 9–12 and a College Algebra PROB ≥ C or 43 or more on the ACT assessment; or a score of at least 7 on the mathematics placement test; or a score of at least 26 on the arithmetic placement test.

MATH 011. Intermediate Algebra Review. (2) I, II, S. Supplemental algebra lab that is required to be taken in conjunction with MATH 010 for students with a College Algebra PROB ≥ C is 38–45 on the ACT assessment; or a score between 7 and 10 inclusive on the mathematics placement test. The student will receive 2 hours credit, which will not count towards graduation. Two hours rec. a week.

MATH 015. Beginning Algebra. (5) This course provides coverage of the topics considered essential in an introductory algebra course. Five hours rec. a week. May not be used toward degree.

MATH 020. College Algebra Review. (2) I, II. Supplemental algebra lab that is required to be taken in conjunction with MATH 100 for students with a College Algebra PROB ≥ C is 54–59 on the ACT assessment; or a score between 15 and 17 inclusive on the mathematics placement test. The student will receive 2 hours credit, which will not count towards graduation. Two hours rec. a week.

MATH 100. College Algebra. (3) I, II, S. Pr.: B or better in MATH 010; or two years of high school algebra and a College Algebra PROB ≥ C of 60 or more on the ACT assessment; or a score of at least 18 on the mathematics placement exam.

MATH 120. Logic. (2) Set theory is introduced on an intuitive basis and developed as a mathematical structure to include Boolean algebra. Symbolic logic will be introduced and then will be applied to the solutions of problems including statements, truth tables, arguments, and proofs. Two hours rec. a week.

MATH 125. Elementary Functions. (3) I, II. A 3-credit hour course composed of 2 credit hours of in-class lecture and 1 credit hour of laboratory. The lecture portion includes basic algebraic, geometric, and trigonometric concepts. The purpose of the laboratory is to help review mathematic concepts, provide individual help, and apply mathematical concepts related to the student's technical area. Two hours rec. and two hours lab a week.

MATH 150. Plane Trigonometry. (3) I, II, S. Trigonometry and inverse trigonometric functions, trigonometric identities and equations; applications involving right triangles and applications illustrating the laws of sines and cosines. Pr.: Students are placed in this course on the basis of their score on the College of Technology and Aviation math placement exam or ACT score. Two hours rec. a week.

MATH 151. Applied Plane Trigonometry. (2) I, II, S. Trigonometry and inverse trigonometric functions, trigonometric identities and equations; applications involving right triangles and applications illustrating the laws of sines and cosines. Emphasis is placed on applications to engineering technology, tool and machine design. Pr.: Students are placed in this course on the basis of their score on the College of Technology math placement exam or ACT score. Two hours rec. a week.

MATH 205. General Calculus and Linear Algebra. (3) I, II. Introduction to calculus and linear algebra concepts that are particularly useful to the study of economics and business administration with special emphasis on working problems. Pr.: MATH 100 with C or better grade (College Algebra in the preceding semester is recommended).

MATH 214. Advanced Topics in Mathematics. (4) I. Course content will include solving definite multiple integrals, first order-linear differential equations, linear constant-coefficient equations, mutually independent treatments of systems, the Laplace transform, power series solutions, numerical methods, and Fourier series methods for partial differential equations. Pr.: MATH 215 or 220.

MATH 215. Calculus I. (5) S. Course content includes a brief review of pre-calculus materials of algebra and trigonometry, functions, limits, differentiation, applications of differentiation, integration, and applications of the definite integral. Theory is presented in a style tailored for first-semester students of mathematics. Five hours rec. a week. Pr.: MATH 100; MATH 150 or 151.

MATH 216. Calculus II. (5) S. An extension of MATH 215, Calculus I, to include integration, differentiation, and applications of transcendent functions. Five hours rec. a week. Pr.: MATH 220 or MATH 215.

MATH 220. Analytic Geometry and Calculus I. (4) I, II, S. Analytic geometry, differential and integral calculus of algebraic and trigonometric functions. Pr.: B or better in MATH 100 and C or better in MATH 150; or three years of college preparatory mathematics including trigonometry and Calculus I PROB ≥ C of 55 or more on the ACT assessment; or a score of at least 26 on the mathematics placement exam.

MATH 221. Analytic Geometry and Calculus II. (4) I. II. S. Continuation of MATH 220 to include transcendental functions, techniques of integration, and infinite series. Pr.: C or better in MATH 220.

MATH 222. Analytic Geometry and Calculus III. (4) I. II. S. Continuation of MATH 221 to include functions of more than one variable. Pr.: C or better in MATH 221.

MATH 240. Elementary Differential Equations. (4) I. II. S. Elementary techniques for solving ordinary differential equations and applications to solutions of problems in science and engineering. Pr.: C or better in MATH 222.

Science courses

BIOL 198. Principles of Biology. (4) I. II. S. An introductory course concerned with the behavior of molecules, cells organisms, and populations in an ecosystem-bound and evolving world. Audiotutorial format, equiv. to two hours lec., one hour rec., and three hours lab a week.

◆**CHM 110. General Chemistry.** (3) I. II. S. Principles, laws, and theories of chemistry; important metallic and nonmetallic substances. (An optional laboratory course, CHM 111, is available for an additional hour of credit.) Three hours lec. a week. Pr.: MATH 010 or at least one year of high school algebra.

CHM 111. General Chemistry Laboratory. (3) I, II, S. An optional laboratory course to supplement the material of CHM 110. Three hours lab a week. Pr.: CHM 110 or conc. enrollment.

◆**CHM 210. Chemistry I.** (4) I. II. S. First course of a two-semester study of the principles of chemistry and the properties of the elements and their compounds. Three hours lec. and three hours lab a week. Pr.: One year of high school chemistry and MATH 100 (or two courses of high school algebra).

◆**CHM 230. Chemistry II.** (4) II. Second course of a two-semester study of the principles of chemistry and the properties of the elements and their compounds. Three hours lec. and three hours lab a week. Pr.: CHM 210.

CHM 350. General Organic Chemistry. (3) I. A survey of types of organic reactions important to biological science areas including pre-veterinary and certain agriculture and home economics programs.. Conc. enrollment in CHM 351 is urged. Three hours lec. a week. Pr. CHM 230.

CHM 351. General Organic Chemlstry Laboratory. (2) I. One five-hour lab and one hour of lec. a week. Pr. or conc.: CHM 350.

GEOG 242. Physical Geography. (3) I. In this course the student will explore the issues of world geography and its physical elements. Three hours rec. a week. Pr.: MATH 100, 151, MET 111, CET 110.

◆**GEOL 100. Earth In Action.** (3) I, II, S. The earth's physical, structural, and dynamic features; the most common minerals and rocks; processes affecting the earth. Three hours rec. a week.

◆**GEOL 103. Elementary Geology Laboratory.** (1) I, II, S. Field and laboratory investigation of minerals, rocks; use of maps; environmental studies; erosion, transportation, sedimentation. Two hours lab a week. Pr.: GEOL 100, 105, or 125 or conc. enrollment.

◆**PHYS 101. The Physical World I.** (3) I, II. S. The courses The Physical World I and II are designed to present an overview of the physical sciences for students who have little or no previous physical science. The Physical World I is principally physics and atomic theory. The observations and phenomena are simple and basic. Three hours lec. a week. Open only to freshmen, sophomores, and first-semester transfer students. Not available for credit to students who have credit in PHYS 106.

PHYS 103. The Physical World I Laboratory. (1) I, II. S. Two hours lab a week. Pr. or conc.: PHYS 101.

PHYS 113. General Physics I. (4) I, II, S. A basic development of the principles of mechanics, heat, fluids, oscillations, waves, and sound. Emphasis is on conceptual development and numerical problem solving. Two hours lec., one hour rec., one hour quiz, and two hours lab a week. Pr.: MATH 150 or one-half units of high school algebra and one unit high school trigonometry.

PHYS 114. General Physics II. (4) I. II. The continued treatment of the fundamentals of electricity and magnetism, light and optics, atomic and nuclear physics. These concepts are used to understand D.C. and A.C. circuits, motors, and generators. Emphasis is placed on conceptual development and problem solving. Two hours lec., one hour rec., one hour quiz, and two hours lab a week. Pr.: PHYS 113.

PHYS 213. Engineering Physics I. (5) I. II. Mechanics and heat: for students of science and engineering. Two hours lec., two hours rec., one hour quiz, and two hours lab a week. Pr. or conc.: MATH 221.

PHYS 214. Engineering Physics II. (5) I. II. Sound, electricity, magnetism, light, and modern physics; for students of science and engineering. Two hours lec., two hours rec., one hour quiz, and two hours lab a week. Pr.: PHYS 213, MATH 221.

PHYS 342. Aviation Meteorology. (4) Basic aviation–related meteorology concepts through the study of atmospheric elements and how they generally affect the weather introduction to the subject; water in the atmosphere; variables which cause local weather changes; specific aviation associated hazards; understanding meteorological reports and forecasts; meteorological techniques used in predicting weather patterns. Same as PPIL 342.

Social science and humanities courses

ART 150. The Humanities Through the Arts. (2) II. This course is a general introduction to the humanities, focusing on what they are and their basic importance to man. Among the various arts explored will be painting, sculpture, architecture, literature, drama, music, dance, film, and photography. Emphasis in the class will be on participation, involvement, guest speakers, tours, and enjoyment. Two hours rec. a week.

◆**ECON 110. Principles of Macroeconomics.** (3). I, II, S. Basic facts, principles, and problems of economics; determination of the level of employment, output, and the price level; the monetary and banking system; problems and policies of economic instability, inflation, and growth; principles of economics development; other economic systems. Pr.: Probability of a grade of C or higher (PROB ≥ C) of at least 40 percent according to the economics component of the ACT Student Profile, a score of 18 or higher on the Math Placement Exam, or a grade of B or higher in MATH 010.

◆**ECON 120. Principles of Microeconomics.** (3) I. II, S. Basic facts, principles, and problems of economics including study of the determination of prices; the determination of wages, rent, interest, and profit; theory of the firm; monopoly and government regulation; international economic relations. Pr.: Probability of a grade of C or higher (PROB≥C) of at least 40 percent according to the economics component of the ACT Student Profile, a score of 18 or higher on the Math Placement Exam, or a grade of B or higher in MATH 010.

◆**HIST 231. History of Technology.** (3) I. This course presents an overview of the development of technology from ancient times to modern day, with emphasis on technology and American society from colonial times to present. Perspectives on the impact of technology on the quality of life will be explored. Three hours rec. a week.

ME 560. Engineering Economics. (3) I, II. Economic analysis of problems as applied in engineering. Three hours rec. a week. Pr.: ECON 110, junior standing.

PHILO 105. Introduction to Critical Thinking. (3) I. II. An introduction to the values of the Western intellectual tradition. Emphasizes the concepts of truth and reasoning and their application to science, ethics, and everyday life. Open only to freshmen and sophomores.

PHILO 585. Engineering Ethics. (3) I or II. An examination of the principles of ethics as applied to cases arising in the practice of the various branches of engineering.

POLSC 355. Contemporary Issues. (3) I, II. Study and analysis of selected political topics of immediate relevance and concern. May be repeated once.

◆**PSYCH 110. General Psychology.** (3) I. II. S. An introductory survey of the general content areas of psychology, including methods, data, and principles.

PSYCH 120. Dealing with Difficult People. (1) Designed to help people cope with the broad spectrum of difficult people. One hour rec. a week.

SOCIO 211. Introduction to Sociology. (3) I, II. S. Development, structure, and functioning of human groups; social and cultural patterns; and the principal social processes.

Statistics courses

◆**STAT 320. Elements of Statistics.** (3) I. II, S. A basic first course in probability and statistics; frequency distributions; averages and measures of variation; probability; simple confidence intervals and tests of significance appropriate to binomial and normal populations; correlation and regression, including confidence intervals and tests of significance for bivariate populations. Pr.: MATH 100.

Aviation

Peter Kennedy, Interim Department Head

Professor Barnard and Gross; Assistant Professors Garrison and Kennedy; Instructors Boldenow, Kelley, Rankin, and Smith.

Airframe and powerplant certificate (APC)

69 hours required for completion

This two-year program prepares students for the Federal Aviation Administration airframe and powerplant certificate. Students who successfully complete the program will be awarded a certificate of completion.

Upon passing the FAA written, oral, and practical exams, graduates will be certified airframe and powerplant maintenance technicians.

Airframe and powerplant mechanics inspect, repair, modify, and maintain aircraft for manufacturers, commercial airlines, businesses, corporations, and general aviation operators.

Freshman

Fall semester

AVM 111	Basic Aircraft Electricity	4
AVM 121	Aircraft Drawings	1
AVM 131	Aircraft Standards	3
AVM 141	Aircraft Science	5
MATH 125	Elementary Functions	3
		16

Spring semester

AVM 112	Aircraft Welding	2
AVM 132	Aircraft Fluid Power	3
AVM 142	Airframe Systems	4
AVM 152	Airframe Structures and Repair	5
AVM 162	Airframe Electrical Systems	4
		18

Sophomore

Fall semester

AVM 231	Aircraft Finish and Fabrication	3
AVM 241	Navigational Aids and Communication Systems	3
AVM 261	Aircraft Inspection and Assembly	5
AVM 321	Powerplant Fundamentals	4
AVM 351	Powerplant Ignition and Electrical Systems	3
		18

Spring semester

AVM 312	Aircraft Propellers	2
AVM 322	Powerplant Operation and Troubleshooting	3
AVM 332	Gas Turbine Powerplant	5
AVM 342	Powerplant Induction and Fuel Systems	4
AVM 352	Powerplant Overhaul	3
		17

Aviation maintenance degree (AVM)

Associate of applied science
83 hours required for graduation

The applied science degree in aviation maintenance is a terminal degree that can be earned in two years. The degree goes beyond the airframe and powerplant certificate program to include general education courses recommended by the Kansas Board of Regents.

Freshman

Fall semester

AVM 111	Basic Aircraft Electricity	4
AVM 121	Aircraft Drawings	1
AVM 131	Aircraft Standards	3
AVM 141	Aircraft Science	5
MATH 100	College Algebra	3
SPCH 106	Public Speaking I	3
		19

Spring semester

AVM 112	Aircraft Welding	2
AVM 132	Aircraft Fluid Power	3
AVM 142	Airframe Systems	4
AVM 152	Airframe Structures and Repair	5
AVM 162	Airframe Electrical Systems	4
		18

Summer session

ECON 110	Principles of Macroeconomics	3
ENGL 100	Expository Writing I	3
PSYCH 110	General Psychology	3
		9

Sophomore

Fall semester

AVM 231	Aircraft Finish and Fabrication	3
AVM 241	Navigational Aids and Communication Systems	3
AVM 261	Aircraft Inspection and Assembly	5
AVM 321	Powerplant Fundamentals	4
AVM 351	Powerplant Ignition and Electrical Systems	3
		18

Spring semester

AVM 312	Aircraft Propellers	2
AVM 322	Powerplant Operation and Troubleshooting	3
AVM 332	Gas Turbine Powerplant	5
AVM 342	Powerplant Induction and Fuel Systems	4
AVM 352	Powerplant Overhaul	3
MATH 151	Applied Plane Trigonometry	2
		19

Airway science—aviation maintenance (AWS AM)

Bachelor of science in aeronautical technology (airway science)
148 hours required for graduation

Students may continue their studies in aviation maintenance beyond the associate degree to obtain the bachelor of science degree in aeronautical technology. The two-year associate degree is designed as a terminal degree for the average maintenance technician.

The bachelor of science degree is designed for the maintenance technician with a future goal of a management position. This would include shop foreman, lead technician, and other supervisory positions.

The additional courses will give the student background for leadership roles in the aviation maintenance area. Courses in people skills and communications, both verbal and written, are enhanced. Additional math skills as well as computer skills will be developed.

There are two additional speciality areas in the maintenance field covered: the non-destructive testing of aviation parts and aircraft, and also the use of advanced composites in the larger transport category aircraft. This degree would be a strong asset to the maintenance technician looking for employment in the airline industry.

Freshman

Fall semester

AVM 111	Basic Aircraft Electricity	4
AVM 121	Aircraft Drawings	1
AVM 131	Aircraft Standards	3
AVM 141	Aircraft Science	5
MATH 100	College Algebra	3
		16

Spring semester

AVM 112	Aircraft Welding	2
AVM 132	Aircraft Fluid Power	3
AVM 142	Airframe Systems	4
AVM 152	Airframe Structures and Repair	5
AVM 162	Airframe Electrical Systems	4
		18

Summer session

ECON 110	Principles of Macroeconomics	3
ENGL 100	Expository Writing I	3
		6

Sophomore

Fall semester

AVM 231	Aircraft Finish and Fabrication	3
AVM 241	Navigational Aids and Communication Systems	3
AVM 261	Aircraft Inspection and Assembly	5
BUS 115	Supervisory Management	3
PPIL 111	Private Pilot	4
		18

Spring semester

BUS 121	Human Relations in Organizations	2
CMIS 100	Introduction to MS-DOS	2
CMIS 130	Database Management	2
CMST 101	Applied BASIC Programming	2
MATH 150	Plane Trigonometry	3
PHYS 113	General Physics I	4
SPCH 106	Public Speaking I	3
		18

Summer session

PSYCH 110	General Psychology	3
		3

Junior

Fall semester

AVM 321	Powerplant Fundamentals	4
AVM 351	Powerplant Ignition and Electrical Systems	3
CMST 225	Commercial Software Analysis	3
HIST 231	History of Technology	3
MANGT 390	Business Law I	3
SOCIO 211	Introduction to Sociology	3
		19

Spring semester

AVM 312	Aircraft Propellers	2
AVM 322	Powerplant Operation and Troubleshooting	3
AVM 332	Gas Turbine Powerplant	5
AVM 342	Powerplant Induction and Fuel Systems	4
AVM 352	Powerplant Overhaul	3
		17

Senior

Fall semester

AVM 405	Non-Destructive Testing	3
ENGL 202	Technical Writing	3
MATH 220	Analytic Geometry and Calculus I	4
MKTG 400	Marketing	3
STAT 320	Elements of Statistics	3
		16

Spring semester

AVM 400	Composites	4
CHM 210	Chemistry I	4
PPIL 305	Aviation Safety	3
PPIL 400	Aviation Legislation	3
POLSC 355	Contemporary Issues	3
		17

Aviation maintenance review (AVMR)

Aviation maintenance review courses are designed to provide training for those students qualifying under FAR 65.77. This training is usually necessary to pass the FAA written, oral, and practical exams for the airframe and powerplant certificate. The credit hours for this training can be applied toward requirements for an associate degree in aviation maintenance. A maximum of 30 semester credit hours can be waived for the FAA certificate for airframe and powerplant maintenance when enrolled in an associate degree program at the college.

AVMR 220	Aviation Maintenance Review/General	4
AVMR 230	Aviation Maintenance Review/Airframe	4
AVMR 250	Aviation Maintenance Review/Powerplant	4

Avionics technology degree (AVIO)

Associate of applied science
69 hours required for graduation

Avionics is a contraction of aviation electronics. It deals with all electronics on board an aircraft, and includes the areas of communication, navigation, and flight control. The program prepares students to be technicians in both general aviation and air carrier Repair Stations. There is a tremendous need for trained, qualified technicians in avionics, and coupled with the rapid advances in technology, the need is growing at a greater rate than for any other aviation-related career field.

Freshman

Fall semester

ELET 101	Direct Current Circuits	4
CMET 150	Digital Logic	3
MATH 100	College Algebra	3
MATH 151	Applied Plane Trigonometry	2
AVIO 242	Installation	4
		16

Spring semester

ELET 102	Alternating Current Circuits	4
ELET 110	Semiconductor Electronics	4
AVIO 244	Navigation II	4
PHYS 113	General Physics I	4
SPCH 105	Public Speaking IA	2
		18

Sophomore

Fall semester

AVIO 240	Aero Communications	4
AVIO 241	Navigation I	4
AVM 121	Aircraft Drawings	1
AVM 131	Aircraft Standards	3
ENGL 100	Expository Writing	3
CMST 100	Applied Basic Programming	2
		17

Spring semester

AVIO 243	FCC License Study	1
AVIO 245	Pulse I	4
AVIO 246	Pulse II	4
AVIO 247	Flight Control Systems	3
Humanities/social science/business electives		6
		18

Professional pilot degree (PPIL)

Associate of technology
68 hours required for graduation

The Jeppesen–Sanderson integrated flight training program is utilized to obtain private, commercial, instrument, and multi-engine ratings.

The two-year associate degree emphasizes business courses as a complement to the English, math, and science requirements. Professional pilot graduates may fly as charter, business, corporate, or airline pilots.

The flight training program is FAR 141 approved. The approval allows students to meet the commercial instrument minimum-flight-hour requirement in 190 hours instead of 250 hours.

Flight training is conducted in Cessna 150s, Beechcraft Sundowners, Beechcraft Bonanzas, Beechcraft Barons, and a Beechcraft C-90 King Air. Both standard and full graphics simulators are used for additional training benefit.

The lab time reflected in the pilot courses are minimum times. Significant time commitment is necessary for labs and flight training. This program requires additional costs above the standard tuition, books, and supplies.

Freshman

Fall semester

PPIL 111	Private Pilot	4
PPIL 113	Private Pilot Flight Lab	1
BUS 115	Supervisory Management	3
CMST 225	Commercial Software Analysis	3
MATH 100	College Algebra	3
Business management elective		2
		16

Spring semester

PPIL 112	Professional Instrument Pilot	3
PPIL 114	Professional Instrument Pilot Flight Lab I	1
PPIL 212	Professional Instrument Pilot Flight Lab II	2
ECON 110	Principles of Macroeconomics	3
ENGL 100	Expository Writing I	3
MATH 150	Plane Trigonometry	3
PSYCH 110	General Psychology	3
		18

Sophomore

Fall semester

PPIL 211	Professional Commercial Pilot	3
PPIL 213	Professional Commercial Pilot Flight Lab	2
PPIL 221	Preventive Maintenance	2
MKTG 400	Marketing	3
PHYS 113	General Physics I	4
SPCH 106	Public Speaking I	3
		17

Spring semester

PPIL 362	Multi-Engine Ground School	1
PPIL 363	Multi-Engine Flight Lab	1
ENGL 202	Technical Writing	3
MANGT 390	Business Law I	3
Professional pilot/humanities/math/science/ social science electives		9
		17

Airway science–professional pilot (AWS PP)

Bachelor of science in aeronautical technology (airway science)
126 hours required for graduation

Students may continue their studies in professional pilot beyond the associate degree level to obtain the bachelor of science degree in aeronautical technology.

The Jeppesen–Sanderson integrated flight training program is utilized to obtain private, commercial, instrument, certified flight instructor, and multi-engine ratings.

The student will receive instrument flight instructor and multi-engine flight instructor certificates in addition to classes rooted in aviation applications. A jet/prop transition course is also available in this option and training is performed in the Beechcraft C-90 King Air.

The flight training program is FAR 141 approved. The approval allows students to meet the commercial instrument minimum-flight-hour requirement in 190 hours instead of 250 hours.

Flight training is conducted in Cessna 150s, Beechcraft Sundowners, Beechcraft Bonanzas, Beechcraft Barons, and a Beechcraft C-90 King Air. Both standard and full graphics simulators are used for additional training benefit.

The lab time reflected in the pilot courses are minimum times. Significant time commitment is necessary for labs and flight training. This program requires additional costs above the standard tuition, books, and supplies.

Freshman

Fall semester

PPIL 111	Private Pilot	4
PPIL 113	Private Pilot Flight Lab	1
CMIS 100	Introduction to MS-DOS	2
MATH 100	College Algebra	3
Business/management elective		2
		12

Spring semester

PPIL 112	Professional Instrument Pilot	3
PPIL 114	Professional Instrument Pilot Flight Lab I	1
PPIL 221	Preventive Maintenance	2
CMST 101	Applied BASIC Programming	2
ENGL 100	Expository Writing I	3
MATH 150	Plane Trigonometry	3
PSYCH 110	General Psychology	3
		17

Sophomore

Fall semester

PPIL 212	Professional Instrument Pilot Flight Lab II	2
CMIS 130	Database Management	2
ECON 110	Principles of Macroeconomics	3
PHYS 113	General Physics I	4
SPCH 106	Public Speaking I	3
PPIL 211	Professional Commercial Pilot	3
		17

Spring semester

ENGL 202	Technical Writing	3
PPIL 213	Professional Commercial Pilot Flight Lab	2
MATH 220	Analytic Geometry and Calculus I	4
ECON 120	Principles of Macroeconomics	3
Math/science/technical elective		5
		16

Junior

Fall semester

PPIL 342	Aviation Meteorology	4
PPIL 362	Multi-Engine Ground School	1
PPIL 363	Multi-Engine Flight Lab	1
CMST 225	Commercial Software Analysis	3
HIST 231	History of Technology	3
SOCIO 211	Introduction to Sociology	3
		15

Spring semester

PPIL 305	Aviation Safety	3
PPIL 312	CFI Ground School	6
PPIL 314	CFI Flight Lab	2
Professional pilot elective		3
		14

Senior

Fall semester

PPIL 415	Human Factors	3
PPIL 425	Advanced Aircraft Systems	3
PPIL 435	Air Transportation	3
PPIL 482	CFI Instrument Ground School	1
PPIL 483	CFI Instrument Lab	1
MANGT 390	Business Law I	3
STAT 320	Elements of Statistics	3
		17

Spring semester

PPIL 400	Aviation Legislation	3
PPIL 420	Advanced Aerodynamics	3
PPIL 440	FAR 135 Operations	3
PPIL 492	CFI Multi-Engine Ground School	1
PPIL 493	CFI Multi-Engine Lab	1
MKTG 400	Marketing	3
Humanities/social science elective		3
		17

Aviation maintenance courses

AVM 111. Basic Aircraft Electricity. (4) I. A basic concept of DC/AC circuits, with basic laws relating to the following: measuring voltage, current, resistance, continuity and leakage; relationship of voltage, current and resistance in electrical circuits; reading and interpretation of electrical circuit diagrams; electrical devices and inspection and servicing of batteries. Three hours lec. and three hours lab a week.

AVM 112. Aircraft Welding. (2) II. Theory and skill development in aircraft welding processes. Exercises in gas welding processes as applied to ferrous and nonferrous materials. Oxygen/acetylene, inert gas, and resistance welding processes are to be studied. One hour rec. and three hours lab a week.

AVM 121. Aircraft Drawings. (1) I. The course is designed to teach the student how to recognize and identify each kind of line as it appears in aircraft drawings and to interpret the meaning of the lines as they relate to surfaces and details in drawings. Three hours lab a week.

AVM 131. Aircraft Standards. (3) I. A survey of the organization of the Federal Aviation Administration and the Civil Aeronautics Board. Emphasis will be placed on the regulations, standards, and specifications of each of these organizations. Two hours rec. and three hours lab a week.

AVM 132. Aircraft Fluid Power. (3) II. A study of basic fluid mechanics as it applies to practical applications in aircraft systems. Compressible and incompressible fluid systems will be studied. Two hours rec. and three hours lab a week. Pr.: AVM 141, MATH 125.

AVM 141. Aircraft Science. (5) I. A survey of aircraft nomenclature, basic physics, theory of flight and aerodynamics, aircraft ground operation and servicing, and aircraft hardware, materials, and processes. Three hours rec. and six hours lab a week.

AVM 142. Airframe Systems. (4) II. A study of the airframe systems and components to include: pressurization, heating and cooling, and structural device. Two hours rec. and six hours lab a week. Pr.: AVM 141.

AVM 152. Airframe Structures and Repair. (5) II. A study of materials commonly used in airframe structures and the associated study of making structural repairs according to recommended procedures. Skills in sheetmetal are stressed. Three hours rec. and six hours lab a week. Pr.: AVM 141.

AVM 162. Airframe Electrical Systems. (4) II. An advanced study of DC/AC circuits law relating to circuit analysis and a detailed study of measuring instruments. Advanced study of relays, switches, alternators, and other devices encountered in circuit analysis, troubleshooting, and repair. Two hours rec. and six hours lab a week. Pr.: AVM 111.

AVM 231. Aircraft Finish and Fabrication. (3) I. This course is designed to acquaint the student with the wood and fabric coverings and procedures used on aircraft, and methods used in preparation for and application of paint finishes to aircraft surfaces. One hour rec. and six hours lab a week.

AVM 241. Navigational Aids and Communication Systems. (3) I. A survey study of the aids to navigation and communications used in light and intermediate class aircraft. Operation and installation of the various types of equipment will be stressed. Two hour rec. and six hours lab a week. Pr.: AVM 111.

AVM 261. Aircraft Inspection and Assembly. (5) I. A study of assembly and manufacturing procedures and inspection of aircraft components. This course also covers in detail annual and 100-hour inspections. Three hours rec. and six hours lab a week. Pr.: MATH 125, AVM 121, 131, 141.

AVM 285. Helicopter Maintenance. (7) S. A study of airframe, rotor transmission, and engine components of turbine and reciprocating engine helicopters. Also includes a detailed study of required maintenance, historical records, and inspection of components. Three hours rec. and 12 hours lab a week. Pr.: Aviation maintenance major or consent of instructor.

AVM 290. Problems in Aviation. (Var.) I, II, S. Advanced study in a specific area chosen by the instructor. Pr.: Consent of instructor.

AVM 312. Aircraft Propellers. (2) II. A study of the use, maintenance, and inspection of propellers and their related control systems. One hour rec. and three hours lab a week.

AVM 321. Powerplant Fundamentals. (4) I. A study of the principles of operation, design features, and operating characteristics of reciprocating aircraft engines. Includes overhaul inspection procedures on current horizontal opposed and radial engines. Three hours rec. and three hours lab a week. Pr.: AVM 131, 141.

AVM 322. Powerplant Operation and Troubleshooting. (3) II. Experience in installation, operation, and removal of aircraft engines. Engine analysis and diagnosis of malfunctions, including methods of remedy, are performed on airworthy engines. One hour rec. and six hours lab a week. Pr.: AVM 321.

AVM 332. Gas Turbine Powerplant. (5) II. Advanced study of the fundamentals of gas turbine powerplants including operation, studies of supporting systems and inspection methods are fundamental to this course. Two hours rec. and nine hours lab a week. Pr.: AVM 321.

AVM 342. Powerplant Induction and Fuel Systems. (4) II. A study of aircraft induction and fuel metering systems including fuels, carburetors, fuel injection systems, superchargers, and other induction system components used to ensure a dependable and accurate fuel supply at any flight configuration and attitude. Two hours rec. and six hours lab a week. Conc.: AVM 321.

AVM 351. Powerplant Ignition and Electrical Systems. (3) I. A study of battery, magneto high and low tension ignition systems, including turbine ignitors for today's aircraft. Also a study of powerplant starting and charging systems and related components. Emphasis will be placed on troubleshooting, repair, and timing of aircraft ignition systems. Two hours rec. and three hours lab a week. Pr.: AVM 111.

AVM 352. Powerplant Overhaul. (3) II. Practical experience in overhauling reciprocating engines. Engines are assembled and operationally checked in lab. One hour rec. and six hours lab a week. Pr.: AVM 321.

AVM 400. Composites. (4) II. This course will introduce composite materials in use in aircraft production; the course will be mainly concerned with the repair of these materials and the repair procedures. The course will start with the development of composites, a description of each type, the different qualities of each type and hands-on projects for repairs, and the techniques involved with the repairs, such as vacuum bagging and hot bonding. Pr.: AVM 152 or consent of instructor.

AVM 405. Non-Destructive Testing. (3) I. Introduction to nondestructive testing and inspection methods in use in the aviation industry. The course will cover the following types of inspection methods: visual, x-ray (radiographic) magnetic particle, ultrasonic, dye penetrant. Pr.: AVM 141 or AVM 261 or consent of instructor.

Aviation maintenance review courses

AVMR 220. Aviation Maintenance Review/General. (4) The general review course is designed for those individuals who have met the Federal Aviation Administration's eligibility requirements under FAR 65.77. The review conforms to the three levels of training set forth by the FAA. Three hours rec. and three hours lab a week. Pr.: Departmental consent. This course may be offered in two parts as: AVMR 221 Aviation Maintenance Review/General I and AVMR 222 Aviation Maintenance Review/General II.

AVMR 230. Aviation Maintenance Review/Airframe. (4) The airframe review course is designed for those individuals who have met the Federal Aviation Administration's eligibility requirements under FAR 65.77. The review conforms to the three levels of training set forth by the FAA. Pr.: Departmental consent. This course may be offered in two parts as: AVMR 231 Aviation Maintenance Review/Airframe I and AVMR 232 Aviation Maintenance Review/Airframe II.

AVMR 250. Aviation Maintenance Review/Powerplant. (4) The powerplant review course is designed for those individuals who have met the Federal Aviation Administration's eligibility requirements under FAR 65.77. The review conforms to the three levels of training set forth by the FAA. Pr.: Departmental consent. This course may be offered in two parts as: AVMR 251 Aviation Maintenance Review/Powerplant I and AVMR 252 Aviation Maintenance Review/Powerplant II.

Avionics courses

AVIO 240. Aero Communications. (4) I. A study of electronic communications principles which includes the RF spectrum from VLF through microwaves, concentrating on those special techniques applied in aviation. This includes the modulation systems of AM, SSB, pulse, digital, and video. The use of microprocessor systems to control circuitry and frequency synthesizers is thoroughly investigated. Typical operation of the growing use of satellites for aero communications is covered. Emphasis is placed on performance tests and measurements of transmitters and receivers, and troubleshooting to the component level. The course concludes with the operation and maintenance of the emergency locator transmitter system. Pr.: ELET 102 and 110.

AVIO 241. Navigation I. (4) I. A study of the aeronautical navigation systems classified as short range navigation, which includes the VOR, ILS (LOC/GS/MKR), and NDB/ADF equipment. Both the ground signals and airborne receiving, processing, and display equipment is studied. The HSI and slaved compass systems are covered. An overview of the microwave landing system is made. The course concludes with a study of avionics audio systems, including microphones, headsets, audio control panels, and intercom systems. Pr.: ELET 102, ELET 110, and CMET 150.

AVIO 242. Installation. (4) I. This course studies the over-all requirements of operating a FAA-certified Avionics Repair Station including the FARs that govern repair and alteration procedures and the proper documenting of those procedures. Techniques of installing avionics equipment in various types of fixed and rotary wing aircraft are studied and applied. Actual installation in airworthy aircraft is performed for "real world" student practice. The mechanical aspects of installation are covered including precision soldering, aviation hardware, airframe alteration practices, fabrication of special components, and computation of weight and balance of the completed installation. Throughout the course good record-keeping practices are ingrained into the student including completion of Repair Station Work Orders, FFA Form 337s, and all aircraft logbook entries. Pr.: AVM 131.

AVIO 243. FCC License Study. (1) I. This course is a one-hour-per-week, recitation-only study of the knowledge required to pass the Federal Communications Commission general license examination. A question/answer study book is used to guide the class.

AVIO 244. Navigation II. (4) II. A study of the long range navigation techniques used in aviation, which includes the LORAN, Global Positioning System, OMEGA/VLF, and Inertial Navigation Systems. The shorter range but direct route system using VOR-DME called RNAV is also studied. The student explores the signals emitted by the various types of ground stations to fully understand the airborne receiving and processing techniques required of each system. The interconnections to other aircraft avionics such as flight control systems and flight management systems is also studied. Pr.: AVIO 241.

AVIO 245. Pulse I. (4) II. This course studies two of the pulse systems used in avionics known as Distance Measuring Equipment and ATC radar transponder equipment. The characteristics of the airborne or ground emitted signals are studied, then the reception and processing of those signals is investigated in detail to the component level. This includes typical troubleshooting and alignment of the airborne equipment. An overview study is done of the traffic alert and collision avoidance system, and the course concludes by studying altitude encoders used with the ATC radar beacon TXP system and altitude alerters required by higher performance aircraft. Pr.: CMET 150.

AVIO 246. Pulse II. (4) II. This course continues the study of avionics pulse systems with the airborne weather radar system, radio altimeter system, and Stormscope system. The radar antenna, receiver/transmitter, and processing/display sections are studied to the component level. This includes theory, operation, alignment, and troubleshooting details. The radio altimeter system is studied, and the course concludes with an overview and capabilities of the stormscope system. Pr.: CMET 150.

AVIO 247. Flight Control Systems. (3) II. A study is done of aerodynamic flight control laws, servo control systems, error signal generation, summing, processing, and amplification to control actuators of various types. Analog and digital flight control systems are both covered. The Electronic Flight Instrument System, Head Up Display, and Fly By Wire systems are covered from a conceptual, block diagram, and operational view. The course concludes with methods of integrating all avionics equipment into a complete package for an aircraft, and assuring compatibility with all other equipment installed on the aircraft. Problems that can occur between avionics units and other aircraft systems are explored from a "systems approach" to troubleshooting. Pr.: AVM 131.

Professional pilot courses

PPIL 111. Private Pilot. (4) I, II, S. The subject areas necessary for completion and passing of the FAA Private Pilot Written Examination are presented. Four hours rec. a week.

PPIL 112. Professional Instrument Pilot. (3) I, II, S. A study of the procedures, regulations, and techniques required to safely fly in instrument meteorological conditions within our national airspace system. The course will prepare the student to pass the FAA Instrument Airplane Written Examination. Three hours rec. a week. Pr.: PPIL 111.

PPIL 113. Private Pilot Flight Lab. (1) I, II, S. An introduction of the fundamentals of flight. Solo flights to include all flight operations and maneuvers necessary for meeting the aeronautical experience for the FAA Private Pilot Certificate. Three hours lab a week. Conc.: PPIL 111.

PPIL 114. Professional Instrument Pilot Flight Lab. (3) I, II, S. Instructional flight training necessary to maneuver the aircraft safely in actual or simulated instrument meteorological conditions within the national airspace system. Three hours lab a week. Pr.: PPIL 111, 113. Conc.: PPIL 112.

PPIL 196. VFR Pilot Proficiency Lab. (1–18) I, II, S. Instruction and flight training necessary to safely operate an aircraft to meet the Federal Aviation Regulations. This course provides the student the opportunity to review and demonstrate proficiency to satisfactorily meet the FAA regulations for the current ratings held, and to satisfactorily meet the requirements of a Biennial Flight Review. Pr.: FAA Private Pilot certificate.

PPIL 197. IFR Pilot Proficiency Lab. (1–18) I, II, S. Instruction, simulator, and flight training necessary to safely operate an aircraft, to meet and maintain the Federal Aviation Regulations currency requirement of Instrument Competency, and maintain instrument currency and competency. Pr.: FAA Private and Instrument Ratings.

PPIL 211. Professional Commercial Pilot. (3) I, II, S. A continuation of PPIL 111-Private Pilot. For preparation to pass the FAA Commercial Pilot written examination. Three hours rec. a week. Pr.: PPIL 111.

PPIL 212. Professional Instrument Pilot Flight Lab II. (2) I, II, S. Instructional cross country flight training necessary to maneuver the aircraft safely in actual or simulated instrument meteorological conditions within the national airspace system. Six hours lab a week. Pr.: PPIL 111, 113, 114.

PPIL 213. Professional Commercial Pilot Flight Lab. (2) I, II, S. An introduction to complex airplane operations and a review of those operations required of a commercial pilot. The completion of this course readies the student to take the commercial FAA flight test. Six hours lab a week. Pr.: PPIL 113. Conc.: PPIL 211.

PPIL 221. Preventive Maintenance. (2) I, II. This course will give the student hands-on experience with the 25 maintenance tasks allowed under FAR 43 entitled preventive maintenance. Two hours rec. a week.

PPIL 271. Helicopter Pilot (Add On). (1) I, II, S. Provides the student with the aeronautical skills and experience necessary to meet the requirements for the addition of a rotorcraft helicopter rating to the pilot certificate. One hour rec. a week. Pr.: PPIL 111, 113 or Private Pilot Certificate Airplane Single Engine Land, or Commercial Pilot Certificate Airplane Single Engine Land.

PPIL 272. Certified Flight Instructor Helicopter. (3) I, II, S. Provides the student with the basic information leading to the helicopter flight instructor certificate. The course is divided into two sections. The first section consists of the fundamentals of teaching and learning, including effective teaching methods, aerodynamics responsibilities, and proper use of the flight training syllabus. The second section is concerned with the analysis of the helicopter flight maneuvers involved in the private, commercial, and flight instructor certificates. Three hours rec. a week. Pr.: PPIL 271, 273. Conc.: PPIL 274.

PPIL 273. Helicopter Pilot Flight Lab. (3) I, II, S. Provides the student with the aeronautical skills and experience necessary to meet and demonstrate the skills requirements for the addition of a rotorcraft helicopter rating to his or her pilot certificate. Nine hours lab a week. Pr.: PPIL 111, 113 or Private Pilot certificate Airplane Single Engine Land, or Commercial Pilot Certificate Airplane Single Engine Land.

PPIL 274. Certified Flight Instructor Helicopter Flight Lab. (2) by appt. This course provides the student with the necessary flight training leading to an FAA Certified Flight Instructor Certificate in helicopters. The course involves dual flight instruction covering all maneuvers necessary for teaching private and commercial certificate requirements. Six hours lab a week. Pr.: PPIL 271, 273. Conc.: PPIL 272.

PPIL 285. Airline Transport Pilot Rating. (2) by appt. Provides the student with the aeronautical knowledge necessary to prepare for the FAA Airline Transport Pilot written examinations. The demonstration of flight maneuvers, with recognition of proper control of emergencies in compliance of the Airline Transport Pilot Practical Test Standards will be stressed. One hour rec. and three hours lab a week. Pr.: Consent of instructor and evaluation of student's pilot experience as it relates to FAR 61.151 through 61.157.

PPIL 288. Pilot Rating Transition Course. (1–18) Instruction, simulator, and flight training necessary to safely operate an aircraft to meet the Federal Aviation Regulations. This course provides the student the opportunity to review and demonstrate proficiency to satisfactorily meet the Practical Test Standards for the current ratings held, and to transfer credit for previously earned ratings to K-State at Salina.

PPIL 299. Complex Aircraft Familiarization and Proficiency Lab. (1–18) I, II, S. Instruction, simulator, and flight training for familiarization and/or currency in flying aircraft with retractable gear, flap, and constant speed propellers. This course is necessary to meet insurance requirements and maintain proficiency necessary to operate safely in the Air Traffic Control System.

PPIL 305. Aviation Safety. (3) I, II. A course designed to assist the student to develop an attitude and philosophy for accident prevention. The course includes ideal and practical, personal and organizational safety procedures and goals; safety philosophies; aircraft accident reports; human factors; principles of accident investigation; accident prevention program and accident statistics; current events; NTSB special studies.

PPIL 310. Aircraft Certification. (3) I, II. A presentation of Federal Aviation Regulations pertinent to aircraft certification, maintenance and associated documents, publication records, and weight and balance computations.

PPIL 312. Certified Flight Instructor Ground School. (6) I, II, S. Instruction techniques, practices, and procedures necessary to provide skill in organizing and presenting lessons. This course will prepare the student for the FAA Certified Instructor Written Examination. Six hours rec. a week. Pr.: PPIL 211.

PPIL 314. Certified Flight Instructor Flight Lab. (2) I, II, S. The needed flight skills and proper display of teaching ability will be emphasized. The demonstration of flight maneuvers with recognition of common errors in students performing the demonstrated maneuvers is stressed. Six hours lab a week. Pr.: PPIL 114. Conc.: PPIL 212.

PPIL 342. Aviation Meteorology. (4) I, II. Basic aviation–related meteorology concepts through the study of atmospheric elements and how they generally affect the weather introduction to the subject; water in the atmosphere; variables which cause local weather changes; specific aviation associated hazards; understanding meteorological reports and forecasts; meteorological techniques used in predicting weather patterns. Same as PHYS 342.

PPIL 362. Multi-Engine Ground School. (1) I, II, S. Ground instruction covering multi-engine aircraft to develop the aeronautical knowledge to meet the ground school requirements for a multi-engine land class rating. One hour rec. per week.

PPIL 363. Multi-Engine Flight Lab. (1) I, II, S. Flight instruction and experience in a multi-engine aircraft to develop the aeronautical skills to meet the requirements to add a multi-engine land class rating to the student's existing pilot certificate. Three hours lab a week. Pr.: PPIL 362 or conc.

PPIL 367. Prop-Jet Familiarization and Introduction Lab. (1–18) I, II, S. Instruction, simulator, and flight training necessary to meet the requirements to become proficient in flying the BE 90 King Air. Training and flight experience necessary to maintain flight proficiency in the BE 90.

PPIL 369. High Altitude Endorsement/Project Familiarization and Introduction Lab. (1–18) I, II, S. For pilots to meet the requirements of FAR 61.31 (f), which includes high altitude operations, physiological training and log book endorsements required to fly airplanes that are certified to fly above 25,000 feet. Pr.: FAA Private, Instrument, and Multi-engine ratings.

PPIL 379. King Air Transition. (1–18) I, II, S. The needed instruction, simulator, and flight training to obtain skills and experience to fly the Beechcraft King Air as Pilot in Command. The demonstration of flight maneuvers necessary to meet the Federal Aviation Regulations and demonstrate competent operations of aircraft systems in the Air Traffic Control System and in emergency flight conditions. Pr.: FAA Private, Instrument, and Multi-engine ratings.

PPIL 389. Problems in Aviation. (1–18) I, II, S. To provide the student an opportunity to apply aviation education to the improvement of skills previously learned as designated by the instructor.

PPIL 395. Multi-Engine Proficiency Lab. (1–18) I, II, S. Instruction, flight training, and flying multi-engine aircraft to maintain VFR/IFR currency as well as multi-engine proficiency. Pr.: FAA Private and Multi-engine ratings.

PPIL 396. Introduction to Aerobatics. (1–3) I, II, S. Instruction and flight training necessary to develop an understanding and flight proficiency in basic aerobatics. This course provides the student the opportunity to develop a better understanding of aircraft and safety of flight in other than normal flight attitudes. Pr.: PPIL 113.

PPIL 397. Advanced Aerobatics. (1-3) I, II, S. Advanced instruction in aerobatics. This course will consist of loops, aileron rolls, snap rolls, cloverleaf, cuban eights, barrel rolls, etc. The student will be expected to gain the proficiency to perform aerobatic maneuvers in combinations. Pr.: PPIL 397.

PPIL 398. BE 58 Multi-Engine Familiarization and Proficiency Lab. (1–18) I, II, S. Instruction, simulator, and flight training necessary to meet the requirements necessary to become proficient in flying the BE 58 Baron. Training and flight experience necessary to maintain flight proficiency in the BE 58 Baron. Pr.: FAA Private, Instrument, and Multi-engine ratings.

PPIL 400. Aviation Legislation. (3) I, II. A survey of state, federal, and international regulation of the aviation industry. Historical and current events, past and present legislation, conventions and treaties will be examined. Emphasis is on the historical and legislative aspects as they correlate to the development and control of aviation. Pr.: PPIL 111.

PPIL 415. Human Factors. (3) I, II. Aeromedical information, causes, symptoms, prevention, and treatment of flight environment disorders. Altitude effects, spatial disorientation, body heat imbalance, visual abnormalities and psychological factors are included as they relate to pilot performance and survival effectiveness. Pr.: PPIL 111.

PPIL 420. Advanced Aerodynamics. (3) I, II. Incompressible flow airfoil theory, wing theory. Calculations of stall speed, drag, and basic performance criteria. Configuration changes, high and low speed conditions. Special flight conditions. Introduction to compressible flow. Aerodynamic performance of aircraft powered by reciprocating, turboprop, and jet turbine engine. Stability and control, weight and balance, and operating data. Pr.: PPIL 111.

PPIL 425. Advanced Aircraft Systems. (3) I, II. Electrical, environmental, hydraulic, fuel, ignition, and lubrication systems, including theory of operation and calculations. Principles, systems, analysis, operation, and limitations of advanced electronic navigation, flight director, and automatic flight control systems, including Inertial Navigation Systems, VLF/OMEGA, LORAN, GPS. Pr.: PPIL 111.

PPIL 435. Air Transportation. (3) I, II. The development and present status of air transportation, federal legislation, characteristics and classification of air carriers; the organization and function of the FAA and the Civil Aeronautic Board are reviewed. Pr.: PPIL 111.

PPIL 440. FAR 135 Operations. (3) II. Aircraft and equipment evaluation, maintenance, flight operations, administration, fiscal considerations. Emphasis will be placed on Federal Aviation regulations, marketing, training requirements, record keeping. Pr.: PPIL 211.

PPIL 482. Certified Instrument Flight Instructor Ground School. (1) I, II. Instrument instruction techniques, practices, and procedures necessary to provide skills in organizing and presenting lessons in instrument flying procedures. This course will prepare the student for the FAA Certified Instrument Flight Instructor written exam. One hour rec. per week. Pr.: PPIL 312.

PPIL 483. Certified Instrument Flight Instructor Lab. (1) I, II. Instrument instruction techniques, practices, and procedures necessary to provide skills in organizing and presenting lessons in instrument flying procedures. This course will prepare the student for the FAA Certified Instrument Flight Instructor practical test. Three hours lab per week. Pr.: PPIL 312, 314, and PPIL 482 or conc.

PPIL 492. Certified Multi-Engine Flight Instructor Ground School. (1) I, II. Provides the student with the aeronautical knowledge necessary to meet the requirements for the addition of an airplane, multi-engine rating to the flight instructor certificate. One hour rec. a week. Pr.: PPIL 312, 314.

PPIL 493. Certified Multi-Engine Flight Instructor Lab. (1) I, II. Provides the student with the aeronautical skills and experience necessary to meet the requirements for the addition of an airplane, multi-engine rating to the flight instructor certificate. Three hours lab a week. Pr.: PPIL 312, 314, and PPIL 492 or conc.

Engineering Technology

Leonard Gold, Head

Professors Buchwald, Delker, Farmer, Hassan, and Keating; Associate Professors Anderson, Francisco, Kinsler, Swanson, and Wilson; Assistant Professors Al-Taha, Arnold, Dandu, Dauterman, Simmonds, and Spaulding.

Civil engineering technology (CET)

Associate of technology
69 hours required for graduation

Civil engineering technicians perform functions in the control and layout of horizontal locations and vertical elevations for proposed construction of buildings, bridges, and transportation facilities. Their work includes preliminary and final surveys, assisting in design and detailing stage, or supervision of construction to maintain quality control.

The program prepares civil technicians for employment in industries dealing with the design and construction of highways, bridges, railroads, airports, water supply and distribution projects, and other projects ranging from small-scale construction jobs to those involving tremendous capital expenditures.

Accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology.

Freshman

Fall semester

MATH 100	College Algebra	3
MATH 151	Applied Plane Trigonometry	2
CET 120	Materials Sampling and Testing	2
MET 111	Technical Graphics	3
ENGL 100	Expository Writing I	3
CMST 101	Applied BASIC Programming	2
Humanities/social science elective		2
		17

Spring semester

PHYS 113	General Physics I	4
MATH 220	Analytic Geometry and Calculus I	4
CET 110	Civil Technology Drafting	2
CET 130	Plane Surveying	4
ENGL 202	Technical Writing	3
		17

Sophomore

Fall semester

CET 211	Statics	3
CET 220	Soils and Foundations	2
CET 241	Construction Methods and Estimating	2
CET 323	Route Location Surveying	4
MET 245	Material Strength and Testing	3
MET 252	Fluid Mechanics I	3
		17

Spring semester

SPCH 105	Public Speaking IA	2
CET 312	Transportation Systems	4
CET 313	Structural Design	5
CHM 210	Chemistry I	4
	or	
PHYS 114	General Physics II	4
CET 210	Civil CAD	2
	or	
Humanities/social science elective*		3
		18

*To be selected from ECON 110, ENGL 255, HIST 231, or PSYCH 110.

Construction option

This option stresses the construction aspects of civil engineering technology. Courses are taught on contracts and specifications, construction surveying, print reading, and building electrical and mechanical systems. Emphasis will be in the area of heavy construction. In lieu of CET 110 Civil Technology Drafting and CET 312 Transportation Systems, the following courses must be substituted to complete the construction option:

CET 140	Print Reading for Civil Construction	1
CET 231	Construction Surveying	2
CET 240	Contracts and Specifications	1
CET 340	Mechanical and Electrical Systems	3

Surveying technology (SRVT)

Associate of technology
70 hours required for graduation

Surveying is necessary for the planning, design, and layout of all major engineering projects. Surveys are used for subdivisions, buildings, bridges, railroads, highways, airports, canals, dams, irrigation and drainage projects, and in preparation of any kind of map.

Surveying technology graduates may seek employment in construction, as government surveyors (federal, state, county, and municipal), as engineering consultants, and as private surveyors.

Any person who goes into private practice must be licensed. This program, combined with the necessary work experience, will help individuals qualify to take the Registered Land Surveyors Examination.

Freshman

Fall semester

MATH 100	College Algebra	3
MATH 151	Applied Plane Trigonometry	2
MET 111	Technical Graphics	3
ENGL 100	Expository Writing I	3
CMIS 105	Introduction to PC Software	2
SPCH 105	Public Speaking IA	2
ELET 100	Basic Electricity	3
		18

Spring semester

CET 110	Civil Technology Drafting	2
CET 130	Plane Surveying	4
CET 230	Land Surveying I	3
PHYS 113	General Physics I	4
STAT 320	Elements of Statistics	3
		16

Sophomore

Fall semester

CET 211	Statics	3
CET 232	Surveying Astronomy	2
CET 236	Topography Surveying Practicum	1*
CET 250	Photogrammetry	3
CET 323	Route Location Surveying	4
ENGL 202	Technical Writing	3
CMST 101	Applied Basic Programming	2
		18

Spring semester

CET 150	Introduction to GIS	3
CET 234	Advanced Surveying Techniques	3
CET 235	Surveying Law	3
CET 237	GPS and Network Surveying Practicum	1
CET 238	Boundary Surveying Practicum	1
CET 312	Transportation Systems	4
Humanities/social science elective		3
		18

Civil engineering technology electives must be a minimum of two credits from CET 120, CET 210, CET 220, CET 231, or CET 241.

Humanities/social science elective is to be selected from ECON 110, ENGL 255, HIST 231, or PSYCH 110.

* Could be substituted by having adequate field experience as accepted by the CET faculty in change of class.

Geographic information systems (GIS) option within surveying technology (SRVT)

This option allows students to obtain an associate degree in surveying while enhancing their degree with additional course work in the area of geographic information systems. This option addresses a rapidly increasing need for technicians familiar with the GIS technology.

GIS is a computer-based mapping system that stores, integrates, and analyzes information about land aspects. GIS technology is currently being used in tax mapping; resource management; routing of emergency vehicles, delivery vans, and trucks; facilities management; planning; management of transportation systems and utility networks; legislative reapportionment; and monitoring environmental hazards. Completing the additional hours of this option will enhance a student's job opportunities.

Students choosing the GIS option can fulfill the requirements by completing the course curriculum listed for surveying technology as well as the following courses:

CMST 100	Operating Systems	3
GEOL 100	Geology (Earth in Action)	3
GEOL 130	Elementary Geology Lab	1
GEOG 242	Physical Geography	3
GIS 255	Operating a GIS	2
GIS 350	Advanced Issues in GIS	3
GIS 355	Projects in GIS	2
GIS 451	Georeferencing	3
CMST 250	Networking I	3
		23

Students in the GIS option may choose to substitute seven of the above hours for Transportation (4 hours) and the three one-hour practicum courses (3 hours) required in the SRVT curriculum.

This would reduce the required additional hours beyond the associate degree in surveying technology to 16 semester hours.

Bachelor of science in land information technology (LIT)

A minimum of 60 hours beyond the associate degree

The land information technology degree is a +2 program that expands the associate degree in surveying technology or other related fields. It is the first bachelor's degree in Kansas to incorporate modern surveying and mapping technology such as global positioning systems, GIS, photogrammetry, and other advanced topics in surveying and land information.

Course work in this bachelor's degree program provides additional depth of study dealing with subdivision design, network adjustment, map projection, engineering database, remote sensing, and projects in GPS and photogrammetry.

Junior

Fall semester

MANGT 390	Business Law I	3
CET 330	Land Surveying II	3
Business elective		3
Humanities/social science elective		3
Physical science elective		3
		15

Spring semester

STAT 320	Elements of Statistics	3
CET 460	Engineering Technology Surveying	3
	or	
CET 450	Engineering Technology Database	3
Technical elective		2
Humanities/social science elective		3
Civil engineering technology elective		2
		13

Senior

Fall semester

GIS 451	Georeferencing	3
CET 232	Surveying Astronomy	2
CET 250	Photogrammetry	3
CET 430	Map Projection*	3
CET 434	Surveying Adjustment	3
CET 490	Senior Seminar	1
		15

Spring semester

CET 420	Sub-Division Design	4
CET 550	Projects in Photogrammetry	3
	or	
CET 534	Projects in GPS	3
CET 550	Applications of Remote Sensing	3
Technical elective		3
Humanities/social science elective		3
		16

*Can be substituted by a three-hour cartography course.

Civil engineering technology elective must be a minimum of two credits from CET 211, CET 231, or GIS 350.

Technical elective is to be selected from CET 220, CET 340, GIS 355, CMST 245, CMST 250, or MET 252.

Computer information systems technology (CMIS)

Associate of technology

68 hours required for graduation

The computer information systems technology curriculum emphasizes algorithmic design skills to develop fundamental problem-solving skills in multiple computer programming languages. Structured programming provides the tools for solving problems in practical computer applications. Information systems and business theory provide an understanding of the context within which systems are implemented. Class assignments are structured to prepare students for real-life programming projects. The curriculum places a strong emphasis on PC hardware, networking, and commercial software applications. Courses require a significant amount of laboratory work; the time spent in the lab will vary depending on the abilities of each student.

Freshman

Fall semester

CMST 100	Operating Systems	3
CMST 103	Algorithmic Design	3
CMIS 105	Introduction to PC Software	2
MATH 100	College Algebra	3
ENGL 100	Expository Writing I	3
BUS 251	Financial Accounting	3
		17

Spring semester

CMST 130	Introduction to PC Hardware	3
CMST 180	Database Development	3
CMST 220	COBOL I	3
SPCH 105	Public Speaking 1A	2
ENGL 202	Technical Writing	3
BUS 252	Managerial Accounting	3
		17

Sophomore

Fall semester

CMST 250	Networking I	3
CMST 330	Systems Analysis and Design	3
BUS 253	Accounting Using Microcomputers	3
Computer science technology elective		3
Computer science technology elective		3
Humanities/social science elective		3
		18

Spring semester

CMST 333	Software System Development	3
Computer science technology elective		3
Computer science technology elective		3
Business/humanities/social science elective		3
Science elective		4
		16

Computer science technology electives

CMST 140	Visual Basic I	3
CMST 230	RPG	3
CMST 245	Applications in C Programming	3
CMST 255	Visual Basic II	3
CMST 300	Assembly Language Programming	3
CMST 315	Networking II	3
CMST 320	COBOL II	3
CMST 341	Advanced C++ Programming	3
CMST 345	Networking III	3
CMST 350	UNIX Administration	3

Other electives as approved by the computer section head.

Computer science technology (CMST)

Associate of technology

68 hours required for graduation

The computer science technology curriculum provides a solid foundation in science, mathematics, and computer programming. Students in this program of study understand concepts of network administration through a broad range of networking applications. Students will experience a wide range of scientific computer applications using multiple computer languages and operating systems. Courses require a significant amount of laboratory work; the time spent in the lab will vary depending on the abilities of each student.

Freshman

Fall semester

CMST 100	Operating Systems	3
CMST 103	Algorithmic Design	3
CMST 130	Introduction to PC Hardware	3
MATH 100	College Algebra	3
ENGL 100	Expository Writing I	3
MATH 151	Applied Plane Trigonometry	2
		17

Spring semester

CMST 140	Visual Basic I	3
CMST 180	Database Development	3
CMST 250	Networking I	3
CMIS 105	Introduction to PC Software	2
PHYS 113	General Physics I	4
MATH 205	General Calculus and Linear Algebra	3
	or	
STAT 320	Elements of Statistics	3
		18

Sophomore

Fall semester

SPCH 105	Public Speaking 1A	2
CMST 330	Systems Analysis and Design	3
ENGL 202	Technical Writing	3
Computer science technology elective		3
Computer science/humanities technology elective		3
Social science/humanities/business elective		3
		17

Spring semester

CMST 333	Software System Development	3
Computer science technology elective		3
Computer science technology elective		3
Social science/humanities elective		3
Science elective		4
		16

Computer science technology electives

CMST 220	COBOL I	3
CMST 230	RPG	3
CMST 245	Applications in C Programming	3
CMST 255	Visual Basic II	3
CMST 300	Assembly Language Programming	3
CMST 315	Networking II	3
CMST 320	COBOL II	3
CMST 341	Advanced C++ Programming	3
CMST 345	Networking III	3
CMST 350	UNIX Administration	3

Other electives as approved by the computer section head.

Geographic information systems (GIS) option

72 hours required for graduation

This option allows the student to combine their computer learning with a specialization in GIS and application of global positioning systems (GPS) and related technologies.

The GIS option is a computer-based mapping system which stores, integrates, and analyzes information about land aspects. GPS is a satellite-based navigation and positioning system. GIS and GPS technologies are tools that are currently being utilized in tax mapping; resource management; navigation, routing, and tracking of delivery vehicles and emergency vehicles; facilities management; precision agriculture; planning; management of transportation systems and utility networks; legislative reapportionment; and monitoring of environmental hazards and utility networks; legislative reapportionment; and monitoring of environmental hazards and our water supply and water quality.

The need for graduates who are well versed in the GIS technologies is rapidly increasing. Employment opportunities are excellent with even greater demand in the foreseeable future.

Freshman

Fall semester

Math 100	College Algebra	3
Math 151	Applied Plane Trigonometry	2
GEOL 100	Earth in Action	4
ENGL 100	Expository Writing I	3
CMST 103	Algorithmic Design	3
CMST 100	Operating Systems	3
		18

Spring semester

CMIS 105	Introduction to PC Software	2
CMST 140	Visual Basic I	3
CMST 130	Intro to PC Hardware	3
GIS 150	Intro to GIS	3
MET 111	Technical Graphics	3
CET 130	Plane Surveying	4
		18

Sophomore

Fall semester

CET 250	Photogrammetry	3
GIS 251	Georeferencing	3
ENGL 202	Technical Writing	3
CMST 330	System Analysis and Design	3
GEOG 242	Physical Geography	3
GIS 350	Advanced Issues in GIS	3
		18

Spring semester

PHYS 113	General Physics I	4
STAT 320	Elements of Statistics	3
GIS 355	Projects in GIS	3
CMST 250	Networking I	3
SPCH 105	Public Speaking 1A	2
BUS 115	Supervisory Management	3
		18

Computer engineering technology (CMET)

Associate of technology
69 hours required for graduation

The computer engineering technology curriculum provides a solid foundation in both computer electronics and in computer software topics. Students in this program study circuit analysis, digital electronics, microprocessor programming and interfacing, programming languages, and hardware/software integration. These technical subjects are taught in conjunction with courses in mathematics, science, and interpersonal communications.

Employers of computer engineering technicians include companies that use and develop data communications equipment, automated manufacturing systems, and computer peripheral equipment. Computer engineering technicians work in industrial automation, computer products design, computer networking, as well as computer system installation and maintenance.

Accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology.

Freshman

Fall semester

ELET 101	Direct Current Circuits	4
MATH 100	College Algebra	3
MATH 151	Applied Plane Trigonometry	2
ENGL 100	Expository Writing I	3
CMIS 105	Introduction to PC Software	2
CMET 150	Digital Logic	3
		17

Spring semester

ELET 102	Alternating Current Circuits	4
ELET 110	Semiconductor Electronics	4
MATH 220	Analytic Geometry and Calculus I	4
CMST 101	Applied BASIC Programming	2
CMET 250	Microprocessor Fundamentals	4
		18

Sophomore

Fall semester

ELET 260	Electronic Instrumentation and Measurements	4
ELET 290	Electronic Manufacturing I	1
PHYS 113	General Physics I	4
CMST 222	Applications in C Programming for Engineering Technology	3
SPCH 105	Public Speaking 1A	2
CMET 260	CAD Applications in Electronics	2
		16

Spring semester

CHM 210	Chemistry I	4
CMET 251	Digital Systems	4
ENGL 202	Technical Writing	3
ELET 291	Electronic Manufacturing II	1
CMST 130	Introduction to PC Hardware	3
Humanities/social science elective		3
		18

Electronic engineering technology (ELET)

Associate of technology
68 hours required for graduation

The electronic engineering technology curriculum emphasizes the theory and application of electronic circuits, instrumentation, and systems. Numerous laboratory experiences reinforce the concepts taught in the classroom. Course work in this curriculum includes a strong foundation in basic circuit theory, semiconductor applications, digital systems, microprocessor programming and interfacing, plus essential concepts in mathematics, science, and interpersonal communications.

Electronic engineering technicians work in all areas of the electronics industry, including industrial control electronics, communications, and digital systems. These individuals work closely with electronic engineering technologists, electrical engineers, computer scientists, and other professionals in the design, development, marketing, and maintenance of electronic products and systems.

Accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology.

Freshman

Fall semester

ELET 101	Direct Current Circuits	4
ENGL 100	Expository Writing I	3
MATH 100	College Algebra	3
MATH 151	Applied Plane Trigonometry	2
CMIS 105	Introduction to PC Software	2
SPCH 105	Public Speaking IA	2
		16

Spring semester

ELET 102	Alternating Current Circuits	4
ELET 110	Semiconductor Electronics	4
PHYS 113	General Physics I	4
MATH 220	Analytic Geometry and Calculus I	4
CMST 101	Applied BASIC Programming	2
		18

Sophomore

Fall semester

ELET 210	Linear Circuit Design	5
ELET 260	Electronic Instrumentation and Measurements	4
ELET 290	Electronic Manufacturing I	1
CMET 150	Digital Logic	3
ENGL 202	Technical Writing	3
CMET 260	CAD Applications in Electronics	2
		18

Spring semester

ELET 220	RF Communication Systems	4
ELET 291	Electronic Manufacturing II	1
CMET 250	Microprocessor Fundamentals	4
CHM 210	Chemistry I	4
Humanities/social science elective		3
		16

Bachelor of science in electronic engineering technology (ELETB)

127 hours required for graduation

Students may continue their studies in electronic engineering technology beyond the associate degree level to obtain the bachelor of science degree in electronic engineering technology. The baccalaureate degree typically requires two years of study beyond the associate degree.

Course work in the junior and senior years of the baccalaureate degree program provides additional depth of understanding of circuit analysis techniques, digital systems, data communications, and industrial electronics. Individual and group project assignments are emphasized. Additional mathematics, science, and elective courses provide a strong background with which graduates are prepared for the technical professions of tomorrow.

Graduates work as electronic engineering technologists in many industrial settings. Career activities include product design and development, industrial automation, technical sales, and project management.

Junior

Fall semester

ELET 330	Electric Motors and Controls	4
CMST 222	Applications in C Programming for Engineering Technology	3
MATH 214	Advanced Topics in Mathematics	4
Science elective		4
		15

Spring semester

ELET 310	Industrial Electronics	3
ENGL 200	Expository Writing II	3
Technical elective		3
Humanities/social science elective		3
Business elective		3
		15

Senior

Fall semester

ELET 421	Telecommunication Systems	2
ELET 400	Advanced Network Analysis	3
CMET 451	Digital Circuits and Systems	4
Technical elective		3
Humanities/social science elective		3
		15

Spring semester

ELET 420	Electronic Communication Circuits	3
ELET 590	Electronic Design Laboratory	2
CMET 450	Advanced Data Communications	3
Humanities/social science elective		3
Humanities/social science elective		3
		14

Environmental engineering technology (EVET)

Associate of technology
72 hours required for graduation

The environmental engineering technology program has a heavy emphasis in chemistry and process engineering and is concerned with monitoring processes that produce useful products in a safe, efficient, and cost-efficient manner. An environmental engineering technician might improve a chemical process to reduce toxic emissions, collect and analyze samples in the field, or work in an environmental laboratory. This person might also be involved in aspects of environmental management and regulation.

In the environmental engineering technology program at Kansas State University at Salina you'll learn how chemical processes are developed in the laboratory and pilot plant and are scaled up for industrial production. Environmental considerations and quality control are strongly emphasized. Many courses in this program will review the requirements imposed by environmental regulations and the preparation for litigation. In this atmosphere, there will be many opportunities for discussion of professional ethics.

Computers are heavily integrated into this program and are used in industry in such areas as problem solving, data collection, process simulation, optimization, and control.

Environmental engineering technology students gain laboratory experience in instrumental analysis, organic chemistry, environmental chemistry, microbiology, unit operations, and process control laboratories. In addition, they are encouraged to pursue summer internships in the chemical industry, when such positions are available.

Freshman

Fall semester

CMST 101	Applied BASIC Programming	2
BIOL 198	Principles of Biology	4
ENGL 100	Expository Writing I	3
MATH 100	College Algebra	3
MATH 151	Applied Plane Trigonometry	2
CHM 210	Chemistry I	4
		18

Spring semester

EVET 140	Material and Energy Balances	3
EVET 220	Environmental Science	3
STAT 320	Elements of Statistics	3
CHM 230	Chemistry II	4
CET 150	Introduction to GIS	3
Humanities/social science/business elective		2
		18

Sophomore

Fall semester

EVET 230	Environmental Chemistry and Toxicology	2
EVET 250	Industrial Processes	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Lab	2
ELET 100	Basic Electricity	3
PHYS 113	Physics I	4
		18

Spring semester

EVET 240	Unit Operations	4
EVET 255	Environmental Sampling and Analysis	4
EVET 270	Hazardous Waste Management	2
SPCH 105	Public Speaking IA	2
ENGL 202	Technical Writing	3
Humanities/social science/business elective		3
		18

Mechanical engineering technology (MET)

Associate of technology
69 hours required for graduation

The mechanical engineering technology curricula prepare graduates for positions in mechanical and/or manufacturing industries as engineering technicians or technologists. The programs embrace the design, manufacture, test sales, and maintenance of mechanical products, including the tools and machines by which they are made.

Course work helps students develop the ability to use trade and technical literature to solve problems. Computers are heavily integrated into this program in such areas as problem solving, data collection, process simulation, optimization, and control.

The technician's duties may involve drafting, use of handbooks and tables, calculations of strength and reliability, selection of materials, and cost estimating for the development of almost any type of machine or mechanism. Technicians may also conduct performance and endurance tests on various devices and report results.

Graduates are employed by manufacturing industries, testing laboratories, marketing firms, consulting firms, government agencies, and in businesses they themselves establish.

Accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology.

Freshman

Fall semester

MET 111	Technical Graphics	3
MET 121	Manufacturing Methods	3
MATH 100	College Algebra	3
MATH 151	Applied Plane Trigonometry	2
CMST 101	Applied BASIC Programming	2
ENGL 100	Expository Writing I	3
		16

Spring semester

MET 117	Mechanical Detailing	3
MET 125	Computer-Numerical-Controlled Machine Processes	2
CET 211	Statics	3
MATH 220	Analytic Geometry and Calculus I	4
PHYS 113	General Physics I	4
SPCH 105	Public Speaking IA	2
		18

Sophomore

Fall semester

MET 231	Physical Materials and Metallurgy	3
MET 245	Materials Strength and Testing	3
MET 252	Fluid Mechanics I	3
MET 260	Design Technology I	2
ELET 100	Basic Electricity	3
CHM 210	Chemistry I	4
		18

Spring semester

MET 230	Automated Manufacturing Systems I	3
MET 242	Elements of Mechanisms	3
MET 263	Design Technology II	3
MET 265	Sophomore Design Project	2
ENGL 202	Technical Writing	3
Humanities/social science elective		3
		17

Bachelor of science in mechanical engineering technology (METB)

131 hours required for graduation
(62 upper division + 69 associate degree)

Students may continue their studies in mechanical engineering technology beyond the associate degree level to obtain the bachelor of science degree in mechanical engineering technology. The baccalaureate degree typically requires two years of study beyond the associate degree.

The upper-division curriculum provides greater and more rigorous depth in mechanical theory and applications. Additional study of science, mathematics, communications, social sciences, humanities, and related business and industrial operations provides breadth beyond the student's major concentration.

Junior

Fall semester

MET 314	Computer-Aided Solid Modeling	2
MET 344	Dynamics of Machines	3
MET 364	Design Technology III	3
CMST 222	Applications in C Programming for Engineering Technology	3
MATH 214	Advanced Topics in Mathematics	4
		15

Spring semester

MET 333	Advanced Material Science	2
MET 353	Fluid Mechanics II	3
MET 383	Advanced CAD/CAM	2
ELET 264	Electric Power and Devices	3

ENGL 200	Expository Writing II	3
Approved physics elective		4
		17

Senior

Fall semester

MET 382	Industrial Instrumentation and Controls	3
MET 462	Senior Design Project I	1
MET 481	Automated Manufacturing Systems II	4
IET 263	System Analysis and Quality Control	3
	or	
STAT 320	Elements of Statistics	3
Humanities/social science elective		3
Humanities/social science elective		2
		16

Spring semester

MET 460	Tool Design for Manufacturing	3
MET 464	Senior Design Project II	2
MET 471	Thermodynamics and Heat Transfer	3
ECON 110	Principles of Macroeconomics	3
Humanities/social science elective		3
		14

Bachelor of science in technology management (TCMG)

127–129 hours required for graduation

Students may wish to continue toward a bachelor in technology management. This is accomplished using a 2 + 2 concept to provide an extension to the associate degree and allow an avenue for associate degree holders to receive a bachelor's degree.

K-State at Salina has worked with the College of Business, the Department of Management at K-State, and many community colleges across the state to create this curriculum for further educational needs in the engineering technology area.

Junior

Fall semester

BUS 251	Financial Accounting	3
ENGL 200	Expository Writing II	3
CET 410	Managerial and Engineering Economics	3
STAT 320	Elements of Statistics	3
Humanities/social science elective		3
		15

Spring semester

IET 265	Total Quality Management for Technology	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
SPCH 311	Business and Professional Speaking	3
Humanities/social science elective		3
		15

Senior

Fall semester

ENGL 415	Written Communication for Engineers	3
MANGT 421	Introduction to Operations Management	3
MANGT 466	Management Information Systems	3
PHILO 585	Engineering Ethics	3
Technical elective		3
		15

Spring semester

MANGT 530	Industrial and Labor Relations	3
MANGT 531	Personnel and Human Resources Management	3
MKTG 400	Marketing	3
Humanities/social science elective		3
Technical elective		3
		15

Technical elective—Any engineering technology course that enhances the career objectives of the individual.

Pre-engineering program

Many preliminary courses taken by engineering students are offered at K-State at Salina. This two-year nondegree program has been developed with K-State's College of Engineering to enhance visibility of this alternative and to ensure proper course selection. Technical elective selection will be coordinated with the Engineering Student Services Office in Manhattan.

Freshman

Fall semester

ENGL 100	Expository Writing I	3
MATH 220	Analytical Geometry and Calculus I	4
CHM 210	Chemistry I	4
SPCH 105	Public Speaking IA	2
Humanities/social science elective		3
		16

Spring semester

ENGL 200	Expository Writing II	3
MATH 221	Analytical Geometry and Calculus II	4
CHM 230	Chemistry II	4
ECON 110	Principles of Macroeconomics	3
MET 111	Technical Graphics	3
		17

Sophomore

Fall semester

PHYS 213	Engineering Physics I	5
MATH 222	Analytical Geometry and Calculus III	4
Computer programming elective		2
Humanities/social science elective		3
Technical elective		3
		17

Spring semester

PHYS 214	Engineering Physics II	5
CE 333	Statics	3
MATH 240	Elementary Differential Equations	4
Humanities/social science elective		3
Technical elective		3
		18

Civil engineering technology courses

CET 110 Civil Technology Drafting. (2) II. A course in drafting the types of drawings common to civil engineering technology, including ownership certificates, plans and profiles, contour maps, site grading drawings, and topographic layouts. Drawings are made using traditional drafting equipment and computers. Six hours lab a week. Pr.: MET 111.

CET 120. Materials Sampling and Testing. (2) I. A course in the proper use of aggregates and concrete materials (Portland cement and asphalt) in construction. Sampling and testing methods conform with American Society of Testing Materials standards. Six hours lab a week.

CET 130. Plane Surveying. (4) II. A beginning course in the theory and practice of field measurements and notes for surveying. Emphasis is placed on accuracy and avoidance of common errors and mistakes. Two hours rec. and six hours lab a week. Pr. or conc.: MATH 151.

CET 140. Print Reading for Civil Construction. (1) I. A course dealing with methods used to retrieve information from construction plans in order to build all or part of the project. Two hours lab a week.

CET 210. Civil CAD. (2) II. This course makes use of the computer as a tool for the generation of drawings typical of those used in civil and surveying fields. One hour rec. and two hours lab a week. Pr.: CMST 101. Pr. or conc.: CET 110.

CET 211. Statics. (3) I. A study of forces and their effects on the bodies upon which they act. Three hours rec. a week. Conc.: PHYS 113.

CET 220. Soils and Foundations. (2) I. A course in the identification and classification of soils by the Unified method and the American Association of State Highway and Transportation Officials method. Routine field tests are covered and used in the laboratory. One hour rec. and two hours lab a week. Pr.: MATH 122.

CET 230. Land Surveying I. (3) II. A course dealing with the history of land surveying, procedures for researching records, construction right-of-way surveys, writing legal descriptions, and production of survey documents. Two hours rec. and three hours lab a week. Pr. or conc.: CET 130.

CET 231. Construction Surveying. (2) I. A study of vertical and horizontal alignment and methods used to maintain control stations on a construction job. Emphasis is on practical methods and solutions to problems found on the construction job site. One hour rec. and three hours lab a week. Pr.: CET 130.

CET 232. Surveying Astronomy. (2) I. A course in the use of spherical trigonometric calculations to determine bearing, azimuth, latitudes, longitude, and time from solar, polar, and star observations. Star recognition, locations and determination of line direction are emphasized. One hour rec. and three hours lab a week. Pr.: CET 130.

CET 234. Advanced Surveying Techniques. (3) II. A study of the advanced areas of surveying with primary emphasis on control networks, state plane coordinate systems, error theory, global positioning systems (GPS), tacheometry, geodetic surveying, GPS, and the use of electronic surveying equipment. Two hours rec. and three hours lab a week. Pr.: CET 130, 323.

CET 235. Surveying Law. (3) II. A study of the legal aspects that apply to the surveying profession, and the role of the surveyor within the judicial framework of our court system. Three hours rec. a week. Pr.: CET 130.

CET 236. Topography Surveying Practicum. (1) I. A practical study of the surveying practice with the emphasis on field work and calculations in topographic surveying. One week survey camp. Pr.: CET 130.

CET 237. GPS and Network Surveying Practicum. (1) II. A practical study of the surveying practice with the emphasis on field work and calculations in GPS and survey networks. One-week survey camp. Pr.: CET 130.

CET 238. Boundary Surveying Practicum. (1) II. A practical study of the surveying practice with the emphasis on field work and calculations in boundary surveying. One-week survey camp. Pr.: CET 230.

CET 240. Contracts and Specifications. (1) I. A study of the way a set of contracts and specifications are put together and how they act as a source of data on a construction job. The course also stresses the way information is gained from documents with speed and accuracy. One hour rec. a week. Pr.: CET 140 and 231.

CET 241. Construction Methods and Estimating. (2) I. A study of the basic equipment needs, usage, costs, and quantity determinations for planning and estimating construction projects. Field trips through construction sites and visitations with inspectors assist in developing reporting procedures and inspection responsibilities. One hour rec. and two hours lab a week. Pr.: MATH 100.

CET 250. Photogrammetry. (3) I. A class in which aerial photographs are used to create topographic drawings, relative and absolute orientation, aerotriangulation, orthophoto and rectification, and coordinate transformations. Hands-on experience will be gained by using steroscopic plotters to convert photographic data into engineering maps. Two hours rec. and two hours lab a week. Pr.: CET 130.

CET 252. Internship. (1) I, II, S. Student works during summer or regular semester as an intern in a civil engineering, surveying, or other GIS-related industry. A report detailing duties performed and tasks accomplished is required at the end of the internship period. (Recommended during summer before second year and during second year). May be repeated for credit.

CET 300. Problems in CET. (Var.) I, II, S. A course in which advanced study is done in a specific area chosen by the student. Pr.: consent of instructor.

CET 310. Strength of Materials. (3) II. A study of the internal resistance to external forces. The course also deals with the resulting changes in the dimensions and shapes of bodies produced by outside forces. Three hours rec. a week. Pr.: CET 211.

CET 312. Transportation Systems. (4) II. A study of the design of transportation systems with emphasis on highways, urban roadways, railroads, and airports. Two hours rec. and four hours lab a week. Pr.: CET 323.

CET 313. Structural Design. (5) II. A course combining design of components of structures in steel and reinforced concrete. Basic stress calculations and design concepts are studied for use in either a simplified design, detailing, or inspection role. Three hours rec. and four hours lab a week. Pr.: MET 245.

CET 314. Structural Steel Design. (3) I, II, S. A course covering basic fundamentals of structural steel design. Stress calculations and design concepts are studied for use in either a design or inspection role. Two hours rec. and two hours lab a week. Pr.: CET 311.

CET 315. Reinforced Concrete Design. (3) I, II, S. A course covering basic fundamentals of reinforced concrete design. Stress calculations and design concepts are studied for use in either a design or inspection role. Two hours rec. and two hours lab a week. Pr.: CET 311.

CET 323. Route Location Surveying. (4) I. A course in the geometric methods of horizontal and vertical curve alignment. In addition, transitional spirals are examined and calculated. The laboratory portion provides a grounding of these concepts in the field by actual calculation and staking of control for roads, streets, and various types of routes. Two hours rec. and six hours lab a week. Pr.: CET 130.

CET 330. Land Surveying II. (3) II. A continuation of the study of procedures and techniques used in the determination of legal boundaries. Special emphasis will be placed on the United States Public Land System. The correct techniques to be used in the writing of legal descriptions will be stressed. Two hours rec. and three hours lab a week. Pr.: CET 230.

CET 340. Mechanical and Electrical Systems. (3) II. A study of the way mechanical and electrical systems are used in the construction of a building by a contractor. Systems include plumbing, heating, ventilation, and air conditioning. Two hours rec. and two hours lab a week. Pr.: MATH 151, PHYS 113, and CET 241.

CET 410. Managerial and Engineering Economics. (3) I. Economic analysis of problems as applied in the management of technology. Three hours rec. per week. Pr.: ECON 110.

CET 420. Sub-Division Design. (4) II. A study of the procedures used to execute the survey of control networks for large scale base maps for municipal use. The course will also emphasize the design and layout of plats for subdivisions Three hours rec. and three hours lab a week. Pr.: CET 110 and CET 330.

CET 430. Map Protection. (3) I. A course in spherical and ellipsoidal geometry, conformal mapping, point line and angle transfer between a sphere, an ellipsoid, and a plane, map protection principles, types of projections, deformation and characteristics of equidistant, azimuthal and conformal projections. Emphasis will be made on conformal projections used in surveying and state plane coordinate systems. Two hour rec. and two hours lab a week. Pr.: CET 230, 234, 255.

CET 434. Survey Adjustment. (3) I. A course in numerical analysis, applications of linear algebra, error theory, least squares adjustment principal, condition and observation equations, internal and external reliability and their applications in survey network error analysis, and design of observation schema and the use of adjustment software. Two hours rec. and two hours lab a week. Pr.: CET 234, STAT 320.

CET 450. Engineering Technology Database. (3) II. A study of the application of algebraic specifications and conceptual design tools in solving engineering technology problems, analyzing land information technology problems and spatial data requirements, the use of database technology in handling emergency management, transportation systems and the like, learning methods for conceptual database design for selected civil engineering or surveying technology projects. Two hours rec. and two hours lab a week. Pr.: CET 150, 255.

CET 460. Engineering Technology Surveying. (3) I. A study of the advanced methods of special engineering technology applications for surveying such as in high-level bridges and construction, across water bodies, deformation analysis of engineering projects and land movements, projects on precise measurements and methods such as in building monuments, self-operation and laser tracking instruments. Two hours rec. and three hours lab a week. Pr.: CET 234, 312.

CET 490. Senior Seminar. (1) I. A self-study on various technology and applications projects related to surveying and mapping discipline. Students will be guided by their advisor to carry out a self study on selected problems, write a report, and to present their results to their colleagues and or at professional meetings. One hour seminar. Pr.: Senior standing and instructor permission.

CET 534. Projects in GPS. (2) II. A study of the application global positioning systems for large surveying projects, network measurements, mapping, orthophotography and analytical block adjustment and self-calibration technology, digital photogrammetry and GPS-controlled photogrammetry. Emphasis is made on solving projects in team work environment. One hour rec. and two hours lab a week. Pr.: CET 250.

CET 550. Projects in Photogrammetry. (2) I. A study of the photogrammetric tools for large surveying projects, network measurements, mapping orthophotography and analytical block adjustment and self-calibration technology, digital photogrammetry and GPS-controlled photogrammetry. Emphasis is made on solving projects in team work environment. One hour rec. and two hours lab a week. Pr.: CET 250.

CET 560. Remote Sensing Applications. (3) A study of the various methods of remote sensing, all-weather radar technology and high altitude photogrammetry, digital image processing, and their application in surveying and mapping. Two hours rec. and two hours lab a week. Pr.: CET 250.

Computer information systems courses

CMIS 100. Introduction to MS-DOS and Windows. (2) I, II, S. Provides fundamental concepts of the standard PC environment operating system: MS-DOS and Windows. Students will use the microcomputers in class to apply the operating system commands covered by the instructor. Lab assignments will be required in class. Eight-week course requiring four hours rec. a week in the lab.

CMIS 101. Computer Fundamentals. (2) I, II. This course is designed as an introduction for students seeking to develop a broad, basic familiarity with the use of the microcomputer. Two hours rec. a week.

CMIS 105. Introduction to PC Software. (2) I, II, S. Students will learn to use an integrated software package consisting of a word processor, spreadsheet with graphing capabilities, and a database manager. Fundamental operating system usage will be covered in Windows.

CMIS 110. Word Processing. (2) I, II. A hands-on course introducing fundamental concepts and applications of word processing. Covers editing and formatting commands as well as sophisticated commands of the word processor. The word processing commands covered in class will be applied on the classroom microcomputers. Eight-week course requiring four hours rec. a week in the lab.

CMIS 120. Spreadsheets. (2) I, II. Introduces fundamental concepts and applications of a spreadsheet for a business environment. The class will progress to more sophisticated applications of the spreadsheet during the course of the class. Students will apply the concepts covered to the microcomputers in the classroom. Eight-week course requiring four hours rec. a week in the lab.

CMIS 130. Database Management. (2) I, II. Introduces fundamental concepts of a database management system application. Students will begin with the elementary database commands and will progress to more sophisticated database applications. Students will be required to apply the concepts covered in class to project assignments on the microcomputer. Eight-week course requiring four hours rec. a week in the lab.

CMIS 145. Advanced Windows. (2) I, II. Students will learn to install and configure Microsoft Windows. Students will learn to install and use Windows' applications and utilities. The class will be taught in a computer laboratory environment. One hour rec. and one hour lab a week. Pr.: CMIS 100.

CMIS 150. Advanced Spreadsheets. (2) I, II. This course will cover advanced topics in the use of spreadsheets. Major topics will include macro programming, @ functions, spreadsheet automation, linking spreadsheets, managing data, and importing/exporting data from the spreadsheet. Lecture will be in the computer lab to allow the student a hands-on experience. Students will be required to perform homework assignments outside of class time. One hour rec. and one hour lab a week. Pr.: CMIS 120.

CMIS 200. Introduction to Desktop Publishing. (2) I, II. Students will learn to use PageMaker 4.0, a page composition/layout software package, in the hands-on environment of a PC lab. Students will perform production tasks and will learn the use of a scanner and basic design and production tips. Eight-week course requiring four hours rec a week in the lab. Pr.: CMIS 100 and 110.

CMIS 210. Advanced Desktop Publishing. (2) I, II. Students are expected to have experience in the use of PageMaker. The course will cover proper design and layout of commonly produced publications. These layout techniques will be used by the student throughout the class to produce individual assignments. The class will primarily be taught in a computer laboratory. Each student will have access to a computer for their assignments. Each student will produce and present an individual project at the end of the class. Some homework and computer work will be required outside the class period. One hour rec. and one hour lab a week. Pr.: CMIS 200.

CMIS 250. Introduction to UNIX. (2) I, II. This course is designed to provide the student with the basic commands and knowledge to use the UNIX operating system. The student will learn proper sign-on and-off procedures as well as how to manipulate files within the UNIX directory structure. The class is conducted in the hands-on environment of the computer lab. Eight-week course requiring four hours rec. a week in the lab. Pr.: Consent of instructor.

Computer science technology courses

CMST 100. Operating Systems. (3) I, II, S. This course introduces the fundamental concepts of standard operating systems components, and is designed to give the student a working knowledge of the fundamentals of specific operating systems rather than operating systems theory. Three hours lec. a week. Pr.: None

CMST 101. Applied BASIC Programming. (2) I, II, S. Study of computer techniques and applications for the non-computer science technology majors. BASIC programming language will be used to present concepts of data retrieval, output formatting, searching, sorting, subroutines, functions, and formula translation. Students will demonstrate applications of concepts in a final project. Emphasis of the course will be on problem solving and program structure. Two hours lec. a week. Pr.: None

CMST 103. Algorithmic Design. (3) I, II. This course is designed as a language-independent introduction to the logic of data processing. Topics include an overview of information processing and computer architecture, overview of systems development, problem definition, and problem analysis. The student is also introduced to the various tools, techniques, and devices utilized in computer algorithmic design. Three hours lec. a week. Pr.: None

CMST 130. Introduction to PC Hardware. (3) I, II, S. This course will cover material relating to personal computer hardware. Concepts of memory management and proper hardware configuration and computer upgrades will be covered. Two hours rec. and two hours lab a week. Pr.: Previous computer usage.

CMST 140. Visual Basic I. (3) I, II. This course introduces Visual Basic as an object-oriented, event-driven programming environment. Creating forms, adding controls, designing menu bars, and writing Basic code for events, procedures, and functions will be emphasized. Students will complete several programming assignments and projects that will use multiple forms, file manipulation, use of graphics, and multiple document interface. Students will schedule lab time outside of class for completion of program assignments. Pr.: CMST 101 or 103.

CMST 180. Database Development. (3) I, II. This course deals with the importance of the data dictionary, the database design process, data model comparisons, SQL, and the performance of a database. Laboratory work will include the design and implementation of individual databases. Three hours lec. a week. Pr.: CMST 103 or previous database experience.

CMST 220. COBOL I. (3) I, II. Study of the COBOL programming language will introduce students to algorithmic solutions using business applications. This initial programming class will stress not only the COBOL language but also concepts of modular designed structured programming and techniques. Three hours lec. a week. Pr. or conc.: CMST 100 and 103.

CMST 222. Applications in C Programming for Engineering Technology. (3) I. This course will introduce the student to structured program design and implementation. Students will learn to apply the C language in calculations, input, output, file handling. Students will use the C language as the control language with various interfaces. Students will write approximately 10 programs. Each student will select, design, and implement an individual project at the end of the semester. Three hours lec. Pr.: CMST 101 or other college-level programming language.

CMST 225. Commercial Software Analysis. (3) I, II. Students will be given an in-depth introduction to currently popular software application packages. Such items as word processors, spreadsheets, desktop publishing software, and integrated packages will be examined in terms of direct business/industrial applications. Concepts of each software package (including advantages, disadvantages, limitations, and hardware requirements) will be analyzed. Three hours lec. a week. Pr.: None

CMST 230. RPG. (3) II. This course is designed to introduce the Report Program Generator language. RPG II is used primarily for the generation of business reports including payroll, inventory, general ledger, and other business applications. The lab work consists of writing several RPG II programs to solve business report problems. Three hours lec. a week. Pr.: CMST 100 and 103.

CMST 245. Applications in C Programming. (3) I, II. The syntax of the C language will be covered. Structured programming and modular design will be stressed. Writing functions and procedures will be discussed, as well as the inclusion of standard library functions and calls to the operating system. The uses of C in writing application programs will be reflected in the laboratory program assignments. Three hours lec. a week. Pr.: CMST 103 and previous college-level program language.

CMST 250. Networking I. (3) I, II. This course will cover material that provides an understanding of data communications terms. The course will cover hardware, software, and wiring concepts required for personal computer communications. Two hours lec. and two hours lab a week. Pr.: Previous computer usage.

CMST 255. Visual Basic II. (3) I. This course uses Visual Basic as an object-oriented, event-driven programming environment. Students will complete several programming projects involving the use and manipulation of databases, spreadsheet data. Students will create complete stand-alone executable applications including help procedures and installation methods. Students will also use Visual Basic to create applications using multimedia and graphics. Student programming assignments will concentrate on fewer but larger programming projects. Students will design, implement, and present an *individual* project at the end of this class. Students will schedule lab time outside of class time for completion of programming assignments. Pr.: CMST 140.

CMST 300. Assembly Language Programming. (3) I, II. This course covers programming of a microcomputer at the assembly language level. Students will learn to develop links and integrate assembly language routines to higher-level languages. Specific topics covered include an overview of operating systems and assembly language. Three hours lec. a week. Pr.: CMST 100, 103, and 220 or 245.

CMST 315. Networking II. (3) I, II. This course will cover material that leads to an understanding and installation of local area networking of personal computers using popular networking operating systems. This will include necessary hardware, software, user software, and the different topologies. Two hours lec. and two hours lab a week. Pr.: CMST 250 and previous college-level programming class.

CMST 320. Cobol II. (3) I, II. This course consists of an in-depth study of the COBOL language. More advanced topics will be covered including report writer, table processing, and the COBOL sort/merge feature. Lab work includes writing several business application programs using the COBOL language. Two hours lec. and two hours lab a week. Pr.: CMST 100, 103, 220.

CMST 330. Systems Analysis and Design. (3) I. This course will study the steps in conducting a systems analysis, design and development. Lab work includes a class project to analyze the computer needs of a local business and recommend possible system solutions to be implemented. Three hours lec. a week. Pr.: CMST 100, 103.

CMST 333. Software System Development. (3) II. Implementation, testing, and integration of a software system. Project management and group programming dynamics are important aspects of this class. Pr.: CMST 330 (must be taken in preceding semester)

CMST 341. Advanced C++ Programming. (3) II. This class is designed to expose the experienced C programmer to the object oriented programming (OOP) methodology using C++. Students will first learn the use of data abstraction to describe objects. These objects will be implemented using the C++ environment. Students will create several programs to demonstrate classes, operator overloading, conversion, inheritance, and polymorphism. Students will apply the OOP methods to develop a Microsoft Windows application. Each student will submit an individual C++ project at the end of the semester. Two hour lec. and one hour lab a week. Pr: CMST 245.

CMST 345. Networking III. (3) II. This course will cover the topics of wide area networks, metropolitan area networks, and their topologies. In addition packet switched, private branch exchange, integrated services data networks, and fiber distributed data interface will be covered. Three hours lec. a week. Pr.: CMST 315.

CMST 350. UNIX Administration. (3) II. The course will cover the essentials for becoming a UNIX administrator. Subjects included will be bring up a UNIX system, an in-depth look at the file system, user configuration, handling security, modems, networking, and shell programming. Two hours lec. and one hour lab a week. Pr.: CMST 100 or CMIS 250.

Computer engineering technology courses

CMET 150. Digital Logic. (3) I. Study of basic logic elements including gates, flip-flops, counters, and registers. Includes Boolean algebra, logic reduction methods, and digital logic applications. Emphasis on computer simulation of logic circuits. Two hours rec. and two hours lab a week. Pr. or conc.: ELET 101, CMIS 105.

CMET 250. Microprocessor Fundamentals. (4) II. Concepts of microprocessor architecture, programming, and interfacing. Topics include assembly language programming, data conversion methods, peripheral device interfacing, and microprocessor-based system development tools. Two hours rec. and four hours lab a week. Pr.: CMET 150. Pr. or conc.: ELET 110, CMST 101.

CMET 251. Digital Systems. (4) II. Emphasis on the design and development of digital systems for industrial applications. Topics include fundamentals of data communications, fiber optics, PLDs, FPGAs, and an overview of 16/32 bit microprocessor technology. Two hours rec. and four hours lab a week. Pr. : CMET 250, ELET 260.

CMET 260. CAD Applications in Electronics. (2) I. Application of computer-aided design (CAD) software for electronics. Topics include schematic capture, printed circuit board layout and routing software, advanced circuit simulation, and other software tools. One hour lecture, two hours lab a week. Pr.: ELET 110.

CMET 450. Advanced Data Communications. (3) II. Study of modern data communications concepts and systems. Topic coverage includes telephone systems, lasers, fiber optics, modulation methods, error detection, data protocols, and local area networking. Two hours rec. and two hours lab a week. Pr.: CMET 250, ELET 421.

CMET 451. Digital Circuits and Systems. (4) I. Applications of programmable logic, including microprocessors, microcontrollers, and PLDs to industrial control problems. Students use software design tools such as simulators, timing analysis programs, and cross compilers to design systems and analyze system performance. Data conversion methods and peripheral interfacing techniques are emphasized. Three hours rec. and two hours lab a week. Pr.: CMET 250 and CMST 222.

Electronic engineering technology courses

ELET 100. Basic Electricity. (3) I, II. A survey course designed to provide the non-electronics major with an overview of basic direct current and alternating current circuits. Laboratory exercises reinforce circuit theory and provide skills in the use of common electrical instruments. Two hours rec. and two hours lab a week. Pr. or conc.: MATH 100 or consent of instructor.

ELET 101. Direct Current Circuits. (4) I. An introductory course in basic circuit theory. Analysis of passive circuit networks containing resistance, capacitance, and inductance operating in direct current conditions. Computer simulation of circuit performance. Laboratory exercises emphasize the use of basic electronic instrumentation to measure the characteristics of passive components and circuits. Three hours rec. and two hours lab a week. Pr. or conc.: MATH 100, CMIS 105.

ELET 102. Alternating Current Circuits. (4) II. Analysis of passive circuit networks containing resistance, capacitance, and inductance operating in alternating current conditions. Includes an analysis of the sine wave, polar and rectangular complex algebra, inductive and capacitive reactance, impedance networks, power factor correction, resonance, and magnetic circuits. Also includes an introduction to three-phase power distribution. Two hours rec. and four hours lab a week. Pr.: ELET 101. Pr. or conc.: MATH 151.

ELET 104. Direct Current Circuits Review. (1) II. Provides a review coverage of DC circuits. Includes a review of current and voltage concepts, resistance, power, series and parallel circuit techniques, mesh and nodal analysis, delta-wye conversions, Thevenin's and Norton's Theorems, capacitance, and inductance. One hour rec. a week. Pr.: ELET 100.

ELET 110. Semiconductor Electronics. (4) II. A survey of the family of active electronic devices. Analysis includes both graphical and mathematical models. Laboratory periods are devoted to the measurement of device characteristics in basic circuit configurations. Two hours rec. and four hours lab a week. Pr.: ELET 101.

ELET 210. Linear Circuit Design. (5) I. The application of electronic devices to amplifiers. Emphasis is placed on analysis and design of RC-coupled, transformer-coupled, and direct-coupled amplifiers. Laboratory exercises emphasize principles of circuit design and analysis. Three hours rec. and four hours lab a week. Pr.: ELET 102 and 110.

ELET 220. RF Communication Systems. (4) II. A survey of electronic communication techniques and systems including amplitude modulation, frequency modulation, single-sideband, and pulse modulation. Transmission line concepts, antenna theory, and the effects of noise are also included. Laboratory work involves design and measurement along with field trips to representative sites. Three hours rec. and two hours lab a week. Pr.: ELET 210 and 260.

ELET 260. Electronic Instrumentation and Measurements. (4) I. Theory and operation of basic electronic instruments. Includes analysis and application of ammeters, voltmeters, bridges, impedance meters, counters, and oscilloscopes. Examination of measurement errors and methods of reducing them. Laboratory activities emphasize applications of automated test equipment and associated control software. Two hours rec. and four hours lab a week. Pr.: ELET 102 and 110. Pr. or conc.: CMET 150.

ELET 264. Electric Power and Devices. (3) I. Industrial applications of direct and alternating current power for non-electronics majors. Topics include DC and AC motor characteristics, motor speed control systems, electrical safety practices, power distribution systems, motor control devices, and electronic motor drive systems. One hour rec. and four hours lab a week. Pr.: ELET 100 and MATH 151.

ELET 290. Electronic Manufacturing I. (1) I. Laboratory experience in the fabrication and assembly of electronic circuits. Emphasis is on printed circuit board layout techniques, printed circuit board fabrication, soldering materials and techniques, and packaging concepts. Includes both through-hole and surface mount technology. Two hours lab a week. Pr.: ELET 102 and 110. Pr. or conc.: CMET 150 and 260.

ELET 291. Electronic Manufacturing II. (1) II. Application of the concepts and skills mastered in ELET 290. Individual students produce electronic projects, using industry-accepted manufacturing and documentation practices. Two hours lab a week. Pr.: ELET 290.

ELET 310. Industrial Electronics. (3) II. A study of electronic circuits and systems encountered in industrial environments. Topics include power control devices and applications, power system design, optoelectronic devices and applications, transducers, and computer-based data acquisition and control concepts. Pr.: ELET 210 and CMET 250.

ELET 330. Electric Motors and Controls. (4) I. Characteristics of DC and AC motors, generators, and control devices. Topics include motor configurations, speed control systems, motor starter circuits, polyphase systems, and variable frequency drives. Three hours rec. and two hours lab a week. Pr.: ELET 102.

ELET 400. Advanced Network Analysis. (3) I. A study of various advanced network topics including Fourier series, Laplace transforms, signal flow graphs, feedback theory, responses of networks to various types of input signals, matching and attenuating networks, and filters. Computer programs such as PSpice, Mathcad and Touchstone are used to predict the responses of networks. Three hours rec. a week. Pr.: ELET 210 and MATH 214.

ELET 420. Electronic Communication Circuits. (3) II. A study of RF circuit design, including resonant circuits, filter networks, impedance matching networks, and transistor amplifier design using scattering parameters. Circuits are designed using the Smith Chart and analyzed using simulation programs on the computer. Laboratory work emphasizes use of test equipment in the analysis and optimization of circuit designs. Two hours rec. and two hours lab a week. Pr. : ELET 220.

ELET 421. Telecommunication Systems. (2) I. A survey of telecommunication systems, including the telephone network, microwave and satellite links, fiber optic systems, and cellular radio systems. Two hours rec. a week. Pr.: ELET 220.

ELET 492. Problems in Electronic Engineering Technology. (Var.) I, II, S. Opportunity for advanced independent study in specific topic areas in electronic engineering technology. Topics are selected jointly by the student and the instructor. Pr.: Consent of instructor.

ELET 499. Special Topics in Electronic Engineering Technology. (Var.) I, II, S. On sufficient demand. Advanced topics in electronic engineering technology. Pr.: Varies with the announced topic.

ELET 590. Electronic Design Laboratory. (2) II. Applications of the principles of the design process in executing design projects. Project will be developed by the instructor. Four hours lab a week. Pr.: ELET 330, 310, and 400.

Environmental engineering technology courses

CHET 140. Material and Energy Balances. (3) II. Material balance problem solutions by direct, algebraic, and tie-component methods including recycle, bypass, and purge calculations. General energy balance including energy balances with chemical reactions. Three hours rec. a week. Pr.: CHM 210, MATH 100.

EVET 220. Environmental Science. (2/1) II. This course is designed to acquaint students with fundamental principles and issues in environmental science and technology. Topics include ecological organization, energy and nutrient cycles, air resources, soil resources and processes, water resources, genetic resources, hazardous waste, environmental degradation, ethics and the technology of pollution prevention and remediation, renewable and non-renewable resources, and environmental economics. Laboratory exercises will review major classes or organisms, ecosystems processes, and environmental technologies and instrumentation. Two hours lec., two hours lab per week. Pr: BIOL 198.

EVET 240. Unit Operations. (2/2) II. Application of process engineering principles to industry examples. Topics include fluid flow, heat exchange, distillation, liquid extraction, gas adsorption, humidification, and filtration. Special emphasis is placed on the equation of continuity, Bernoulli's law, and phase distribution. Laboratory exercises apply principles of fluid flow, heat exchange, distillation, and absorption. Two hours lec., four hours lab per week. Pr: CHET 142 and PHYS 113.

CHET 250. Industrial Processes. (4) I. A broad survey of chemical process industries with emphasis on process flow sheet interpretation. Laboratory work involves testing of water, fuels, and select chemicals by standard method and visits to local industries. Two hours rec. and four hours lab a week. Pr.: CHM 210.

EVET 230. Environmental Chemistry and Toxicology. (2) I. Principles of environmental chemistry, pollution, and toxicology. The effect of chemicals in the environment will be presented, discussed and demonstrated in the microbiology laboratory. One hour lec., two hours lab per week. Pr.: CHM 230, EVET 220.

EVET 255. Environmental Sampling and Analysis. (2/2) II. Demonstration and practice with environmental sampling and analysis techniques. Standard collection methods for soil, air, water, and waste will be reviewed for use in the field and in industry. Special emphasis will be placed on methods of documentation and location, quality assurance, sample handling and preservation, and safe operation of equipment. Techniques of instrumental analysis will be applied to environmental samples using EPA methods for analysis of water and wastes. Two hours lec., four hours lab per week. Pr: CHM 230, EVET 230.

EVET 270. Hazardous Waste Management. (2) II. Overview of hazardous waste issues. Topics include origins (generation) of hazardous waste, safe methods of handling, disposal and tracking, hazardous waste regulation, and waste minimization. Two hours rec. per week. Pr.: EVET 230.

EVET 290. Problems in EVET. (Var.) Opportunity for advanced study and practical experience with specific problems of the student's choice in the field of environmental engineering technology. Pr.: Instructor's consent.

IET 263. System Analysis and Quality Control. (3) I. An introductory course in system analysis and statistical quality control, including work in the areas of control charts, control charts for attributes, acceptance sampling plan systems, and methods for determining necessary requirements for specific levels of finished product quality. Three hours rec. a week. Pr.: MATH 100.

IET 265. Total Quality Management for Technology. (3) II. This course addresses the commitment of management and the organization as a whole to the cultural changes necessary to implement quality improvements throughout the organization. Topics include quality organization, Just in Time inventory management, integration of functional areas, team building, management principles, quality costs, and other associated interactive facets of Total Quality Management. The main concern is to provide the student with a working knowledge of conventional TQM tools. Three hours rec. a week.

Mechanical engineering technology courses

MET 111. Technical Graphics. (3) I, II. Free-hand sketching, lettering, scales and measurements. Introduction to CAD system for learning and applying technical graphics concepts and techniques to produce finished drawings. National and international standards. Theory and applications of orthographic projection and pictorial drawings. Standards for symbols, section views, and dimensioning included. Descriptive geometry, including, orthographic solutions involving the point, line and plane projections, intersections as well as surface development of solids, bearings, slope, true length, and true size determination. Six hours lab a week. Pr. or conc.: MATH 100 or consent of instructor.

MET 117. Mechanical Detailing. (3) II. Preparation of shop drawings for manufacturing, fabrication, or assembly. Specifications of size, shape, material for manufacture. Cost and tolerance relationship. Introduction to geometric tolerancing. Selective assembly and stress calculations in interference fits. Computer techniques including CAD, spreadsheets, and mathematical analysis are applied throughout the course. Six hours lab a week. Pr.: MET 111, MATH 100 and 151.

MET 121. Manufacturing Methods. (3) I. Study and practice of welding, weld testing, and cost estimation. Introduction to welding metallurgy and special welding processes. Recitation and laboratory practice in basic machine shop operations on lathes, milling machines, and drill presses. Use of hand tools, measuring tools, metal cutting machines, and grinders are also studied. One hour rec. and six hours lab a week.

MET 125. Computer-Numerical-Controlled Machine Processes. (2) II. Study and practice of basic CNC programming and machining operations. Six hours lab a week. Pr.: MET 121. Pr.: MATH 100 and 151 or consent of instructor.

MET 210. Computer-Aided Drafting. (2) I, II. Applications and understanding of microcomputers in technical drafting and design are studied. Topics include generative graphics, hardware and software terminology, point plotting and line drafting, graphics, programming, geometric figures, dimensioning and annotating, and finished drawings. Six hours lab a week. Pr.: Knowledge of drafting.

MET 230. Automated Manufacturing Systems I. (3) II. A general survey of the various components and operations in an automated manufacturing system including material handling, robotics, tooling, inspection and quality control, CAD, CNC, and other production processes. Two hours rec. and two hours lab a week. Pr.: MET 125 and ELET 100.

MET 231. Physical Materials and Metallurgy. (3) I. A broad view of materials used in industry, including structures of materials, how they react to stress and temperature, how the polyphase structures form, and how they are controlled to produce optimum properties. Students will examine through study and laboratory experimentation ferrous and nonferrous metals, polymers, composites, and ceramics. Two hours rec. and two hours lab a week. Pr. or conc.: MATH 100 and CHM 210.

MET 242. Elements of Mechanisms. (3) II. Fundamental motion concepts of displacement, velocity, and acceleration are studied, as well as analytical and graphical analysis and synthesis of linkages, gear trains, cams, pulleys, and combinations of these elements. Three hours rec. a week. Pr.: MET 111, MATH 220, and PHYS 113.

MET 245. Material Strength and Testing. (3) I. Calculations of material strength and deformation are complemented with principles and practice of mechanical testing including instrumentation and measurement in the areas of loads, stresses, deformations, thermal stresses, and other quantities. Two hours rec. and two hours lab a week. Pr.: CET 211.

MET 252. Fluid Mechanics I. (3) I. Fundamental concepts of fluid mechanics. Study of buoyancy, energy equation, viscosity, and flow measurement. Selected applications of fluid mechanics in civil and mechanical technologies. Computer-aided solution of problems in fluid mechanics. Two hours rec. and two hours lab a week. Pr.: MATH 220, PHYS 113, CMST 101.

MET 260. Design Technology I. (2) I. A study of the design process using handbooks and industrial catalogs to select design components. One hour rec. and two hours lab a week. Pr. or conc.: CET 211.

MET 263. Design Technology II. (3) II. Continued study of design process including investigation of theories of failure, stress analysis, stress concentration, deflections, materials, and costs relating to machine design. Three hours rec. a week. Pr. or conc.: MET 245. Pr.: MET 260.

MET 265. Sophomore Design Project. (2) II. Design and construction of mechanical and/or electromechanical devices to satisfy the requirements of an industrial project. Four hours lab a week. Pr.: MET 260. Pr. or conc.: MET 263.

MET 314. Computer-Aided Solid Modeling. (2) I. Study and applications of computer aided modeling of real-world three-dimensional objects. This course moves beyond simple CAD drawings which consist of collections of lines, arcs, and curves. Activities include developing 3-D object models containing surfaces and edges and analysis of the modeled objects. Four hours lab a week. Pr.: MET 111.

MET 333. Advanced Material Science. (2) II. A continuation of the study of metal and non- metal materials. Emphasis on properties, manufacturing techniques, and applications of materials including plastics, ceramics, composites, electrical and optical materials. Laboratory experiments illustrating the modern concepts in testing of materials with emphasis on design and processing considerations for quality products. One hour rec. and two hours lab a week. Pr.: MET 231 and CHM 210.

MET 344. Dynamics of Machines. (3) I. Velocities, accelerations, and forces in existing mechanisms; application to design of mechanisms to produce motions. Work, energy, impulse and momentum concepts in kinetics. Vibrations in machine parts. Three hour rec. a week. Pr.: MET 242. Pr. or conc.: MATH 214.

MET 353. Fluid Mechanics II. (3) II. Fluid properties, compressible flow, analysis of power conveyance in hydraulic and pneumatic systems. Investigation of relationships between thermal and fluid power. Two hours rec. and two hours lab a week. Pr.: MET 252.

MET 364. Design Technology III. (3) I. Covers design of machine elements for structural integrity, reliability, and economy. Lecture and laboratory work in applications of advanced strength of materials and machine design as it relates to extensive design projects. Two hours rec. and two hours lab a week. Pr.: MET 263.

MET 382. Industrial Instrumentation and Controls. (3) I. An introduction to process control systems for industrial applications. Course topics include concepts and terminology, first- and second-order systems, measurement of motion, gauges and transducers, signal processing, and measurement of properties. Two hours rec. and two hours lab a week. Pr.: ELET 100 and 264 and PHYS 113.

MET 383. Advanced CAD/CAM. (2) II. This course will provide experience in linking CAD to computer-aided manufacturing (CAM) permitting the design of parts using CAD, developing the CNC program using CAM, and then manufacturing the product using CNC machines under computer control. One hour rec. and two hour lab a week. Pr.: MET 125 and 314.

MET 460. Tool Design for Manufacturing. (3) II. Principles and practices involved in tool drawing and design concepts necessary for the manufacture of products. Emphasis on design of jigs and fixtures, gauging devices, dies, ease of operation, and methods of assembly. Production cost related to selection of parts and methods of production will be stressed. Applied laboratory exercises illustrated through specific case studies. Two hours rec. and two hours lab a week. Pr.: MET 117, 125, and 242.

MET 462. Senior Design Project I. (1) I. Selection, definition, and analysis of a project supervised by faculty. Includes consideration of project parameters, trade-off studies, alternative solutions, and justification of selected solution. Completion and presentation of a written project proposal included. Two hours lab a week. Pr.: MET 364 and senior standing.

MET 464. Senior Design Project II. (2) II. Development and implementation of project proposal submitted in MET 462. Construction, packaging, and testing of project culminating in a senior design project report which may include full documentation and performance specifications, functional description, theoretical analysis, schematics, cost analysis, parts list, drawings, etc. Project results will be presented orally to a select committee at the end of the course. Four hours lab a week. Pr.: MET 462 and senior standing.

MET 471. Thermodynamics and Heat Transfer. (3) II. This course emphasizes thermodynamic laws and equations and the use of tables and charts for properties of important fluids. Applications to systems used for producing, transforming, and applying heat and mechanical energy are also studied. Conduction, convection, and radiation heat transfer processes are studied and investigated in the laboratory. Two hours rec. and two hours lab a week. Pr.: MET 252 and MATH 214.

MET 481. Automated Manufacturing Systems II. (4) I. Covers systems for manufacturing operations including facilities, supplies, materials, procedures, and control. Topics include design, programming, feedback for manufacturing, production set-up, automated work cells, and decision issues. Two hours rec. and two hours lab a week. Pr.: MET 230. Pr. or conc.: MET 382.

MET 490. Industrial Work Internship. I, II, S. The student will work as an intern with business and industry in mechanical engineering technology field. A report detailing duties performed and tasks accomplished is required at the end of the internship period. Pr.: Sophomore standing and consent of section chairperson.

MET 492. Problems in Mechanical Engineering Technology. (Var.) I, II. Opportunity for advanced independent study in specific topic areas in mechanical engineering technology. Topics selected jointly by the student and the instructor. Pr.: Consent of instructor.

MET 499. Selected Topics in MET. (Var. 1–6) I, II, S. Group or individual study of a selected topic in mechanical engineering technology, title to be determined in advance of each time the course is offered. Total credits limited to 6 credit hours, with a maximum of 3 credit hours per semester. Instruction is by lecture, laboratory, or a combination of both. Pr.: Permission of section chairperson.

Veterinary Medicine

Neil V. Anderson, Interim Dean
Ronnie G. Elmore, Associate Dean
Jody E. Johnson, Assistant Dean

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General Requirements

Admission

Admission into the College of Veterinary Medicine is based upon a competitive process among qualified students who have completed the minimum 70 required hours of pre-professional courses (see pre-professional requirements). Minimum qualifications include a 2.8 GPA or greater average over the pre-professional requirements and over the last 45 hours of undergraduate college work in order to be considered for an interview. A grade below a C in a pre-professional requirement is not acceptable. Nonresidents must meet the same scholastic requirements to receive an application for the professional curriculum and consideration for selection.

Personal interviews may be required of any student under consideration. Selection is based upon academic achievement and professional potential as determined by grades, interview, application information, references, and GRE scores. Applicants are evaluated on such items as motivation, maturity, communication skills, experience with and knowledge of animals, and experience with and knowledge of veterinary medicine. Therefore, all students interested in applying to the College of Veterinary Medicine are encouraged to have adequate animal exposure and to have work experience related to veterinary medicine to demonstrate to the Admissions Committee an understanding of the profession.

Selection for admission to the curriculum in veterinary medicine is based on individual merit of qualified applicants who have maintained Kansas residency for at least three years immediately prior to first semester enrollment of the year for which they are applying.

After highly qualified Kansans are selected, nonresidents from states with which K-State has a contract to provide veterinary medical education and who are certified by their state are selected. Since the contract status can change, interested applicants should contact the Assistant Dean, College of Veterinary Medicine, for current information regarding contract states.

A limited number of at-large positions are available. Applicants for these positions are usually considered after highly qualified Kansas residents and certified residents of contract states are selected. In the selection of the at-large positions, priority is given to citizens of the United States.

From July 1 to September 15, applications for admission to the professional curriculum can be obtained from the Office of the Assistant Dean of the College of Veterinary Medicine.

No applications are accepted after October 1.

Pre-professional requirements

The pre-professional work may be pursued at K-State in the College of Arts and Sciences or the College of Agriculture or in other academically accredited institutions.

Listed below are required courses, with K-State course numbers listed at left.

Requirements

ENGL 100	Expository Writing I	3
ENGL 120	Expository Writing II	3
SPCH 105	Public Speaking IA	2
	or	
SPCH 106	Public Speaking I	3
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Laboratory	2
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
BIOL 198	Principles of Biology	4
BIOL 510	Embryology	3
BIOL 511	Embryology Laboratory	1
BIOL 455	Microbiology (with lab)	4
ASI 500	Genetics	3
Social sciences and/or humanities		12
Electives		9
		70

All science courses (chemistry, physics, biology, and genetics) must have been taken within six years of the date of application. All pre-professional requirements must be graded.

A bachelor of science degree may be granted by the College of Agriculture or the College of Arts and Sciences upon completion of residency and academic requirements. Detailed information should be obtained from the dean's office of the appropriate college.

Fees for veterinary medical students

See the Fees section in this catalog.

Doctor of veterinary medicine curriculum

The curriculum in veterinary medicine was established to prepare veterinarians for entry into a variety of veterinary medical careers.

The professional curriculum in veterinary medicine is balanced and comprehensive with consideration given to all species.

The academic standards of the College of Veterinary Medicine govern honors, progression, probation, and dismissal. Students are informed of their academic status by the dean's office based on information supplied by the university registrar. The scholastic record of each student is reviewed following each period of registration in the veterinary curriculum.

Courses must be taken as prescribed. Elective courses may be taken with permission only.

For admission to the curriculum in veterinary medicine, consult the previously listed pre-professional requirements.

Completion of the professional curriculum leads to the degree of doctor of veterinary medicine. (Hours required for graduation: pre-professional—70; professional—164; total—234.)

First professional year

Fall semester

AP 700	Gross Anatomy I	6
AP 702	Nutritional Physiology and Metabolism	3
AP 710	Microanatomy	5
AP 737	Veterinary Physiology I	5
DVM 700	Veterinary Orientation	1
		20

Spring semester

AP 705	Gross Anatomy II	6
AP 720	Veterinary Neuroscience	2
AP 747	Veterinary Physiology II	6
CS 701	Clinical Skills I	1
DMP 705	Veterinary Immunology	2
DMP 708	Principles of Epidemiology	2
DVM 701	Ethics and Jurisprudence	1
		20

Second professional year

Fall semester

AP 770	Pharmacology	5
DMP 712	Veterinary Bacteriology and Mycology	5
DMP 715	General Pathology	5
DMP 718	Veterinary Parasitology	5
		20

Spring semester

DMP 720	Systemic Pathology	5
DMP 722	Veterinary Virology	3
DMP 759	Laboratory Animal Science	2
DMP 775	Clinical Pathology	3
CS 703	Clinical Skills II	1
CS 709	Medicine I	4
CS 715	Radiology	3
		21

Third professional year

Fall semester

DMP 777	Laboratory Diagnosis	1
DMP 780	Avian Diseases	3
CS 711	Medicine II	4
CS 712	Food Animal Medicine	4
CS 728	Theriogenology	3
CS 729	Surgery I	5
CS 801	Toxicology	3
		23

Spring semester

DMP 753	Zoonosis and Preventative Medicine	3
CS 704	Clinical Skills III	1
CS 710	Companion Animal Medicine	4
CS 713	Production Medicine	2
CS 714	Clinical Nutrition	3
CS 730	Surgery II	5
		18

Fourth professional year

Summer, fall, and spring semesters

33 hours required core rotations:
Small Animal Medicine
Small Animal Surgery
Equine Medicine and Surgery
Agricultural Clinical Practice
Radiology/Anesthesiology
Necropsy/Diagnostic Investigation
UNL KSU Animal Production

Plus minimum 9 hours of mini-electives and/or rotational electives.

Veterinary Medical Library

The college's library, which is a part of the Kansas State University libraries system, consists of approximately 40,000 volumes that deal with all phases of veterinary medical literature and many allied fields. It subscribes to more than 800 journals and has medical/veterinary CD-ROM data bases.

Center of Excellence for Veterinary Practice Management

The Center for Excellence for Veterinary Practice Management was established for the study, research, and teaching of veterinary practice business management philosophy and methods necessary to effectively deliver professional veterinary care and client services.

Food Animal Health and Management Center

The Food Animal Health and Management Center provides leading-edge research and post-DVM and post-graduate education in the area of food animal health and management, with an emphasis on beef cattle and swine.

Anatomy and Physiology

Jon D. Dunn, Head

Professors Blecha,* Cash,* Dunn,* Erickson,* Fedde,* Frey,* Troyer,* and Westfall;* Associate Professors Kenney,* Musch, Poole, Ross,* and Weiss; Assistant Professors Foster, Freeman, McAllister, Pickar, Provo, and Schultz; Emeriti Professors Klemm and Upson; Adjunct Professors Hand and Toll.

The Department of Anatomy and Physiology presents courses in cell and systemic physiology, gross and microscopic anatomy, nutrition and metabolism, pharmacology, and neuroscience for students enrolled in either the veterinary medicine curriculum or graduate school.

Cardiovascular physiology, immunophysiology and neuroscience, major research themes within the department, are supported with modern research facilities and state-of-the-art research equipment.

Clinical Sciences

R. DeBowes,* Head
R. Fingland,* Associate Head

Professors Anderson,* Brightman,* Carpenter,* R. DeBowes,* Elmore, Gillespie,* Spire,* and Vestweber;* Associate Professors Biller,* Cowan, Cox,* L. DeBowes,* Fingland,* Galland,* E. Gaughan,* Hodgson, McLaughlin,* McMurphy,* and Roush;* Assistant Professors Brandt, Christmas, Dreitz, Fortney, Hoskinson,* Kraft,* Moore,* Sanderson, and Van Metre; Emeriti: Professors Beeman, Blauch, Butler, Carnahan, Edwards, Guffy, Leith, Noordsy, and Taussig; Adjunct Professors Allen, Crane, Davenport, Kirk, Meyers, Richardson, and Roudebush.

The KSU–Veterinary Medical Teaching Hospital is equipped for diagnosis and treatment of animal disease and for instruction of veterinary students, house officers, and post-graduate veterinarians.

The hospital has a capacity of 82 large animal patients and 150 small animal patients. Clinical faculty accompanied by students provide clinical veterinary service to clients in the local community, clients of referring veterinarians from a six-state region, and local and regional livestock farms. In addition to caring for sick animals, they provide preventative medical services and consultation on production medicine and management.

Fourth-year students are active participants in the hospitals and clinical services. Students are regularly assigned on a rotation basis during the year to various specialists on the clinical staff.

The department presents courses in medicine, surgery, toxicology, obstetrics, theriogenology, anesthesiology, radiology, and other clinical specialists to veterinary students and post-DVM trainees.

Diagnostic Medicine/ Pathobiology

M.M. Chengappa, Interim Head

Professors Briggs,* Chengappa,* Fenwick,* Keeton,* Kennedy,* Minocha,* Moore,* Mosier,* Oehme,* Ridley, * Schoning,* and Smith;* Associate Professors Andrews,* Chawdhury,* Dryden,* Fu,* Oberst, Pickrell,* Seedle;* and Stewart;* Assistant Professors Basaraba,* DeBey, Ganla,* Kapil,* Nietfeld,* and Wilkerson;* Emeriti: Professors Bailie, Cook, Dennis, Phillips, and Strafuss; Associate Professors Gray, and Milleret; Adjunct Assistant Professors Hennesy and Henson.

Courses in pathology, parasitology, bacteriology, virology, immunology, public health, toxicology, and clinical pathology are offered for students enrolled in the veterinary medicine curriculum. Third- and fourth-year veterinary medical students receive practical instruction in clinical laboratory procedures and the interpretation of results of laboratory tests.

Courses in disease of laboratory animals, wildlife, and fish are offered for non-veterinary undergraduate and graduate students.

A wide variety of research is conducted in the department that provides new information to enhance animal and human health. Major areas of focus include infectious diseases, immunology, erythrocyte function, environmental toxicology, and diagnostic test development.

The department serves the livestock and companion animal industry by conducting investigational procedures to identify animal disease problems. The department's diagnostic laboratory is nationally recognized as fully accredited with capabilities in all areas of diagnostic medicine by AAVLD.

Graduate School

Timothy R. Donoghue, Dean of the Graduate School and Vice Provost for Research
Paul D. Isaac, Associate Dean
Camille Consolvo, Assistant Dean
K. Bobette McGaughey, Assistant to the Dean

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Graduate study

Kansas State University offers 64 master's level programs and 43 doctoral level programs, offered as departmental or interdepartmental graduate programs. Graduate programs extend the undergraduate experience into advanced areas of concentration in chosen fields of specialization.

While graduate study has major components of study in specialized course work at the advanced level, graduate students must also develop a capacity for independent research and scholarly activity to enable them to carry out original research under the direction of faculty members who are experts in the discipline. Independent research normally results in the preparation and publication of the research study as a thesis or dissertation, and the student must satisfactorily defend that research before a faculty committee appointed by the dean of the Graduate School.

In several professional disciplines, the master's degree curriculum are more typically structured in course work to place stronger emphasis on preparation for professional practice. While these professional programs also incorporate research methodologies in their graduate curriculum, the formal requirement of a thesis requiring independent research may be waived, generally replaced by a capstone document.

Students interested in pursuing graduate studies should consult the *Graduate Catalog* for descriptions of graduate programs and financial assistance opportunities.

Admission

All students desiring to pursue graduate studies must first be formally admitted by the Graduate School. Students normally submit applications for admission directly to departments. After reviewing a student's qualifications to pursue advanced study, academic departments forward a recommendation on admission to the Graduate School for review and action.

All students admitted to the Graduate School are required to adhere to the university policies established by the graduate faculty through the Graduate Council, including those published in the *Graduate Handbook*. They are advised to familiarize themselves with these policies as early in their graduate careers as possible. Students are also advised that departments or interdepartmental graduate programs may have additional policies particular to those programs above and beyond these university policies.

Financial assistance

Financial assistance is available to graduate students in many disciplines to enable them to pursue an advanced degree. Such support is typically extended as fellowships, traineeships, graduate teaching assistantships, or graduate research assistantships, supported by university, state, federal, corporate, or private funding sources. Students interested in financial support are advised to contact the academic department or graduate program directly to obtain current information. Because many of these stipends are offered early, prospective students should make their inquiry upon first intent to pursue graduate studies. Students are also encouraged to visit the campus and discuss their goals for advanced study with the program faculty.

Graduate studies by seniors and undergraduate special students

Seniors at Kansas State University who have a minimum GPA of 3.0 on prior undergraduate work and are within two semesters of receiving a bachelor's degree may take up to 9 hours for graduate credit in courses numbered in the 500, 600, and 700 sequences.

Enrollment in courses in the 800 level and above is normally restricted to students admitted to the Graduate School. In exceptional circumstances, highly qualified students may enroll in courses numbered 800 and above after obtaining permission from the instructor of the course, the head of the department offering the course, and the dean of the Graduate School.

Those wishing to take more than 9 semester hours may apply for admission to, and be accepted by, the Graduate School following the award of a bachelor's degree. Courses taken for undergraduate credit may not be changed to graduate credit.

A student enrolled as an undergraduate special student may not take courses for graduate credit.

Graduate Degrees

Master's degrees

Master of science
Agricultural economics
Agronomy
Animal sciences
Architectural engineering
Biochemistry
Biological and agricultural engineering
Biology
Chemical engineering
Chemistry
Civil engineering
Clothing, textiles, and interior design
Computer and information sciences
Education
  Adult, occupational, and continuing education
  Educational administration
  Elementary education
  Secondary education
  Special education
  Student counseling and personnel services
Electrical and computer engineering
Entomology
Family studies and human services
Food science
Foods and nutrition
Genetics
Geology
Grain science
Horticulture
Industrial engineering
Institution management
Kinesiology
Mass communications
Mathematics
Mechanical engineering
Microbiology
Nuclear engineering
Operations research
Physics
Plant pathology
Psychology
Statistics
Veterinary anatomy and physiology
Veterinary clinical sciences
Veterinary laboratory medicine
Veterinary pathology

Master of arts
Economics
English
Geography
History
Modern languages
Political science
Sociology
Speech
Theatre

Master of accountancy

Master of agribusiness

Master of architecture

Master of business administration

Master of engineering management

Master of fine arts

Master of landscape architecture

Master of music

Master of public administration

Master of regional and community planning

Master of software engineering

Doctoral degrees

Doctor of education

Adult, occupational, and continuing education
Curriculum and instruction
Educational administration
Educational psychology
Special education
Student counseling and personnel services

Doctor of philosophy

Agronomy
Animal sciences
Biochemistry
Biology
Chemistry
Computer science
Economics
  Agricultural
  General
Education
  Adult, occupational, and continuing education
  Curriculum and instruction
  Student counseling and personnel services
Engineering
  Biological and agricultural engineering
  Chemical engineering
  Civil engineering
  Electrical and computer engineering
  Industrial engineering
  Mechanical engineering
  Nuclear engineering
Entomology
Food science
Foods and nutrition
Genetics
Geography
Geology (Cooperative with University of Kansas)
Grain science
History
Horticulture
Human ecology
  Clothing, textiles, and interior design
  Family studies and human services
  Hotel, restaurant, institution management, and dietetics
Mathematics
Microbiology
Physics
Plant pathology
Psychology
Sociology
Statistics
Veterinary pathology
Veterinary physiology

Intercollegiate Athletics

Max Urick, Head and Athletic Director

Coaches Asbury, Bietau, Clark, Ra. Cole, Ro. Cole, Hale, Knight, Norris, McLaughlin, Patterson, Rovelto, and Snyder; Assistant Coaches Bargen, Becker, Campbell, Cole, Crenshaw, Dunn, Ethridge, Fabris, Fox, Fritz, Grove, Hensley, Hudson, Latimore, Mangino, McMillan, Minzner, Moen, Novonty, Peterson, Serafini, J. Smith, M. Smith, M. Smith, M. Stoops, Venables, and Weimers; Sports Information Director Brown; Sports Information Assistants Bartlett, Keller, Lundin, and Wallenberg; Video Director Burge; Trainers Ferguson and Whalen; Administrative Staff Adolph, Andrews, Barrett, Boyle, Cavello, Cox, Epps, Floyd, Fox, Harper, O'Brien, Page, Snyder, Spafford, Switzer, and Wyant.

K-State is a member of the Big 12 Conference and through that affiliation competes with Baylor University, the University of Colorado, Iowa State University, the University of Kansas, the University of Nebraska, the University of Missouri, the University of Oklahoma, Oklahoma State University, the University of Texas, Texas A&M, and Texas Tech.

Intercollegiate competition is open to all students and is coached by staff members who are specialists in their fields.

The men's intercollegiate program competes in football, basketball, baseball, track (indoor and outdoor), cross country, and golf. The women's program offers competition in cross country, volleyball, basketball, track (indoor and outdoor), tennis, golf, and crew.

Athletics courses

ATHM 101. Varsity Baseball. (1) I, II. Pr.: Consent of instructor.

ATHM 102. Varsity Basketball. (1) I, II. Pr.: Consent of instructor.

ATHM 103. Varsity Track. (1) I, II. Pr.: Consent of instructor.

ATHM 104. Varsity Football. (1) I, II. Pr.: Consent of instructor.

ATHM 105. Varsity Golf. (1) I, II. Pr.: Consent of instructor.

ATHW 150. Intercollegiate Basketball. (1) I, II. Pr.: Consent of instructor.

ATHW 152. Intercollegiate Track. (1) I, II. Pr.: Consent of instructor.

ATHW 154. Intercollegiate Tennis. (1) II. Pr.: Consent of instructor.

ATHW 155. Intercollegiate Volleyball. (1) I. Pr.: Consent of instructor.

ATHW 156. Intercollegiate Crew. (1) I, II. Pr.: Consent of instructor.

ATHW 157. Intercollegiate Golf. (1) I, II. Pr.: Consent of instructor.

K-State Research and Extension

Marc A. Johnson, Director
George E. Ham, Associate Director
Richard Wootton, Associate Director

113 Waters Hall
785-532-6147

K-State Research and Extension is dedicated to a safe, sustainable, competitive food and fiber system and to strong, healthy communities, families, and youth through integrated research, analysis, and education.

K-State Research and Extension provides practical, research-based information and educational programs to address critical issues facing individuals, families, agricultural producers, business operators, and communities.

K-State Research and Extension is organized into the following core mission themes; agricultural industry competitiveness; food, nutrition, health, and safety; natural resources and environmental management; youth, family and community development.

One K-State Research and Extension partner, the Kansas Agricultural Experiment Station (KAES), conducts original research both on and off campus. Twenty-four departments in five colleges are involved. K-State Research and Extension is also strongly allied with the Graduate School in training graduate students; interested graduate students are encouraged to seek research assistantships. Many undergraduate students work for K-State Research and Extension, which greatly adds to the classroom experience. Off-campus research is centered at two research-extension centers, two research centers, and 11 experiment fields in various parts of the state.

The other K-State Research and Extension partner, the Cooperative Extension Service, provides an important learning bridge between the university and the people of the state. It applies scientific knowledge, principles, and practices to the grassroots problems of Kansans. At the same time, this unique information delivery system brings back requests for new knowledge to the research staff at the university.

The Cooperative Extension Service staffs five area offices (two operate as part of a Research/Extension Center) and helps maintain county extension offices, staffed by off-campus K-State faculty members, in all 105 Kansas counties.

County extension agents, as official representatives of the United States Department of Agriculture and K-State, are responsible for making people aware of educational programs affecting agriculture, family living, youth, community development, and related areas. The agents serve as a local source of information regarding programs of many states and federal agencies, and then help people apply this information to their specific situation.

Information is published in scientific journals; in station bulletins, extension bulletins, national and international conferences; and in popular journals and news releases to the press and radio and television stations. Requests for station publications should be sent to the Distribution Center, Umberger Hall.

Agricultural Experiment Station

Western Kansas Agricultural Research Centers: Colby–Garden City–Hays
Patrick I. Coyne, Head and Professor

Agricultural Research Center—Hays
Professors Brethour, Harvey, and Martin; Associate Professors Kofoid, Seifers, Stahlman, and Stegmeier; Assistant Professors Thompson and Vanzant.

Investigations are primarily related to plant and animal systems specific to western Kansas, where rainfall is limited. They include beef grazing, feeding, and breeding studies; crop improvement, with special emphasis on wheat, sorghum, pearl millet, and specialty crop improvement; soil management; weed control; plant disease; and insect management.

Northwest Research-Extension Center—Colby
Associate Professors Lamm, Schwulst, and Sunderman.

Major areas of research are crop improvement; soil management; irrigation; sheep production; and horticulture.

Southwest Research-Extension Center—Garden City and Tribune
Professor Greene; Associate Professors Buschman, Kreikemeier, Norwood, Schlegel, and Witt; Assistant Professor Currie.

Current investigations involve irrigation research; dryland soil and crop management, crop improvement; weed control; insect and other pest control in crops and livestock; soil management; and beef cattle nutrition and management studies.

KSU Southeast Agricultural Research Center
Lyle W. Lomas, Head and Professor

Professors Moyer and Sweeney; Associate Professor Coffey; Assistant Professors Kelley and Long.

Research focuses on soil and water conservation; crop improvement; weed control; beef cattle grazing investigations; and forages.

Experiment fields and irrigation development farms
The Kansas Agricultural Experiment Station includes 11 experiment fields: Cornbelt (Powhattan), North Central Kansas (Belleville), Irrigation (Scandia), Sandyland Irrigation and Dryland (St. John), South Central Kansas (Hutchinson), Harvey County (Hesston), East Center (Ottawa), and Kansas River Valley Irrigation (Rossville, and Silver Lake).

Experimental work is devoted to horticultural and forest crops at three fields: Horticulture Research Center (Wichita), Pecan Experiment Field (Chetopa), and East Central Horticulture Field (DeSoto).

Affiliated agencies

Kansas Water Resources Research Institute
Cooperating with the Water Resources Institute, University of Kansas
William L. Hargrove, Acting Director

The Kansas Water Resources Research Institute conducts basic and applied research on water use and to train scientists in water resources. Representatives of K-State and the University of Kansas participate in institute policy making and research. Research is focused on finding the most effective ways of conserving, using, and distributing available water.

Food and Feed Grain Institute
Roe Borsdorf, Director

The Food and Feed Grain Institute has these goals: to develop effective methods of milling and processing grains; to evaluate and improve the quality and nutritional properties of food grains; to find new uses for grains; and to improve the handling, transporting, storing, and domestic and international use of grains and grain food products. Institute scientists are faculty members of the Departments of Grain Science and Industry, Agricultural Economics, Agricultural Engineering, and personnel of agencies such as the U.S. Grain Marketing Research Center.

Center for Applied Statistics
George A. Milliken, Director

Center for Applied Statistics provides consulting services for scientists associated with the Agricultural Experiment Station.

Kansas Center for Agricultural Resources and the Environment
William L. Hargrove, Director

The Kansas Center for Agricultural Resources and the Environment (KCARE) is an interdisciplinary research and education unit of K-State Research and Extension whose purpose is to provide focus on environmental issues related to agriculture. The center works with faculty from academic departments to provide coordination and support for research and educational activities in natural resources and environmental management. The center also works to garner financial support for programs and serves as a single point of contact for agencies and organizations outside K-State who have interest in natural resource and environmental issues.

Wheat Research Center
Ronald L. Madl, Director

The center supports multi-discipline wheat research programs at K-State. The purpose of the center is to facilitate development of interdepartmental teams to resolve issues facing the wheat industry. The center seeks to expand funding options for wheat programs and serves as a sources of information on wheat-related topics at K-State.

Plant Biotechnology Center
The Plant Biotechnology Center links scientists in several colleges and departments who use molecular biology and cell and tissue culture to modify the plant genome. The center's mission is to use biotechnology to add quality and value to Kansas products.

The major emphasis is to develop systems, approaches, linkages, and a knowledge base to apply biotechnology to plant improvement. The goals are to enhance yield and product quality for traditional uses, and to explore value-added uses for novel markets.

Projects include activities that are immediately important to Kansas agriculture and that have a high probability of success in a relatively short period of time. They also include a component of basic research that will reach application at a later time. An important consideration is work on Kansas plants and plant products that could be designed to better meet the demands of national and international markets.

Extension Agriculture, Natural Resources, and Community Development Programs

Daryl D. Buchholz, Assistant Director, Professor

Specialists in several departments of the Colleges of Agriculture and Engineering offer direct educational and technical assistance to citizens throughout the state.

In addition, interdisciplinary programs in water quality; resource use and conservation; community and economic development; value-added processing and production; food, feed, and forage production; animal production and utilization; and farm business and financial management are offered.

Agricultural economics

Daniel J. Bernardo, Head

Farm management
Professors Barnaby, Darling, and Fausett; Associate Professors McEowen and Warmann; Assistant Professors Jones, Kastens, and O'Brien; Administrator DeLano; Farm Management Extension Agricultural Economists Allen, Althauser, J. Dawson, R. Dawson, Docken, Everson, Freeze, Herbel, Huschka, Manny, Miller, Roddy, Rogers, Rowell, Schwarzentraub, Smith, D. Stucky, T. Stucky, Thompson, Wahl, Wilken, Witt, and Wood. Emeriti: Professors Schlender and Thomas; Associate Professors McReynolds and Parker; Assistant Professor Overley; Farm Management Extension Agricultural Economists Collins, Dickson, Faidley, Germann, Greene, Hackler, Hageman, and Mullen.

The extension educational program in farm management is divided into two areas: Kansas Farm Management Association programs and area and state farm management programs.

In the Kansas Farm Management Association program, the 24 farm management agricultural economists conduct an intensive educational program with approximately 2,700 Kansas farm families in the six farm management associations.

The extension farm management program is conducted by state specialists and area economists. It is done with in-depth educational programs in cooperation with the county extension agents. The area specialists conduct in-depth workshops in farm business management with farm families, provide a nearby reference resource for agents, and develop educational materials for agent use.

Agricultural policy
Professor Flinchbaugh

The public affairs extension educational program provides educational information on policy issues of current interest. Problems are analyzed, alternatives and consequences examined, and the people are challenged to reach decisions.

The economic information program provides current data on factors affecting farming, business and industrial operations, labor supply and demand, and family living costs.

Extension marketing
Professors Barton, Mintert, and Tierney; Emerita: Professor Walker.

The main projects of marketing include marketing information, agri-business, and commodity marketing activities. News releases, monthly teleconferences, publications directed to the general public, and special information directed toward specific agricultural audiences are used to disseminate information.

Extension economic development
Professor Darling.

Extension economic development assists communities in development efforts. News releases, publications, and seminars are offered through county extension agents and area community development specialists.

Extension local government and rural health systems
Assistant Professor Leatherman.

The extension local government programs provide direct educational assistance in the areas of structure, management, finance, and policy.

Extension agricultural engineering

James K. Koelliker, Head
James P. Murphy, State Leader

Professors Harner, Koelliker, Murphy, Powell and Rogers; Assistant Professor Taylor; Emeriti: Professors Black, Clark, Holmes, Jepsen and Wendling.

Extension agricultural engineering conducts an educational program which relates to engineering principles to agricultural concerns including water management, water quality, waste management, food processing, ag safety, pesticide application equipment, and livestock production facilities.

Extension agronomy

David B. Mengel, Head
David A. Whitney, State Leader

Professors Devlin, Fjell, Kilgore, Lamond, Mengel, Ohlenbusch, Peterson, Regehr, Shroyer and Whitney; Associate Professors Duncan and Eberle; Assistant Professor Staggenborg. Emeriti: Professors Bieberly, Bohannon, and Edelblute.

Extension agronomy conducts a statewide educational program in agricultural crop production and natural resource conservation. The program is focused on conservation and protection of natural resources through education and technology transfer that results in improved, stable crop production efficiency. The breadth of the program is in understanding the dynamics of crops, weeds, soils, and water on crop production.

Extension animal sciences and industry

Jack G. Riley, Head
John Smith, State Leader

Professors Brazle, Kuhl, Riley, Schafer, and Spaeth; Associate Professors Arns, Blasi, Bolze, Boyle, Nelssen, Smith and Tokach; Assistant Professors Beyer, Boyle, Marston, and Stokka; Instructor Lee. Emeriti: Professors Adams, Call, Corah, Dunham, Francis, Good, Henderson, Westmeyer, and Zoellner; Extension Assistant Olson.

Extension specialists in animal sciences and industry provide leadership for state programs in beef cattle, dairy cattle, horses, poultry, sheep, swine, meats, dairy products, and wildlife damage control.

Extension community development programs

Emeriti: Professors Frazier and Norby; Associate Professors Halazon, and Sisk.

Extension community development programs help Kansans arrive at group decisions and take actions to enhance their communities as economic, social, service, and living centers. Faculty and major programs in economic development, local government, and land resources are identified in agricultural economics and agronomy programs.

Kansas PRIDE program

Associate Specialist McAdoo.

The Kansas PRIDE Community Improvement Program is a cooperative effort between government, education, and private industry to develop an organizational and leadership structure for community-wide volunteer action. The Kansas PRIDE program is jointly administered by the Kansas State University Cooperative Extension Service and the Kansas Department of Commerce and Housing.

Extension entomology

Sonny Ramaswamy, Head
Randall A. Higgins, State Leader

Professors Bauernfeind, Brooks, Cress, Higgins, Lippert, Mock, Ramaswamy, and Sloderbeck; Emeritus: Professor Gates.

Extension entomology is concerned with integrated insect and mite management or control for Kansas citizens. Pilot pest management projects are used to introduce and validate integrated approaches to managing pest populations.

Extension grain science and industry

Brendan J. Donnelly, Head
Timothy J. Herrman, State Leader

Associate Professor Herrman; Emeriti: Balding, Schoeff, and Wilcox.

Educational efforts target all sectors of the grain industry and include people involved with wheat breeding,production, grain handling, merchandising, processing, baking, feed manufacturing, and regulatory compliance. Two thrusts of this program include grain utilization and processing quality; and flour mill, feed mill, and grain elevator management. Subjects include wheat quality as it relates to milling and baking properties, commercial and on-farm grain storage and quality maintenance techniques, on-farm feed manufacturing, commercial feed processing, grain industry safety and regulatory compliance, plant sanitation, food safety, and grain grading.

Extension horticulture, forestry, and recreation resources

Thomas D. Warner, Head
Charles W. Marr, State Leader

Professors Marr, Morrison, and van der Hoeven; Associate Professor Barden, Gast and Stevens; Assistant Professor Keeley; Emeriti: Leuthold.

Programs in extension horticulture and landscaping serve persons interested in fruits, nuts, vegetables, flowers, turf, shrubs, ornamental and shade trees, and forest and riparian management.

Extension plant pathology

Fred W. Schwenk, Head
Douglas J. Jardine, State Leader

Professors Schwenk and Tisserat; Associate Professors Bowden, and Jardine; Instructor O'Mara; Emeriti: Professors King and Willis.

Plant pathology extension specialists provides information about the occurrence and nature of plant diseases and the economic means for their control.

Extension Family and Consumer Sciences

College of Human Ecology

Professors Bowers, Clarke, Murray, Penner, Smith, Strauss and Walker; Associate Professors Bradshaw, Jones, Mark, Munson, Peters, Phillips, Price, Wilken, and Young; Assistant Professors Bode, and Olsen; Instructor Curry; Emeriti: Professors Anderson, Carlson, Ellithorpe, Neufeld, Slinkman, and Tucker; Associate Professors Appleby, Atkinson, Clonts, Howe, Schroeder, and Wells; Assistant Professors Guthrie, Miller, and Starkey.

Educational programs designed to link education with life experience to improve the lines of individuals, families and communities are conducted through extension programming. Specialists serve as faculty members in two departments (Clothing, Textiles, and Interior Design; Foods and Nutrition) and the School of Family Studies and Human Services within the College of Human Ecology.

Program emphases include promoting health and safety, strengthening relationships, and building community. All programs utilize available research bases and local community wisdom in order to focus work on the most crucial issues affecting Kansas families. Example programs include food safety, parent mentoring, nutrition and chronic disease, gerontology resources, seat belt usage, domestic violence, adaptive clothing and housing, and indoor air quality.

Extension Expanded Food and Nutrition Education Program

EFNEP is a nutrition education program for limited-resource families. Paraprofessionals under the supervision of extension family and consumer sciences agents conduct individual and small group lessons to help families improve dietary quality. The program is available in designated counties and its special curriculum is available for any county extension family and sciences agent in the state.

4–H Youth Programs

Gary W. Gerhard, Assistant Director and State 4–H Leader

Professor Fisher; Associate Professors Adams, Fultz, Gerhard, and McFarland; Associate Specialist Lindquist; Emeriti: Professors Apel, Bates, Busset, Eyestone, and Redman; Associate Professors Borst, Salmon, and Whipps; Assistant Professor Weaver.

Kansas 4–H, Kansas' largest youth education apart from the public schools, is the pre-college-level education program of the university, conducted in cooperation with County

Extension Councils and the United States Department of Agriculture.

4–H specialists staff and county extension agents interpret, extend, and encourage the application of relevant and current information to concerned adults, parents, and community leaders on techniques of working with children and youth so that the children and youth will become self-directing, contributing members of society. Programs help children and youth build self-confidence, develop inquiring minds, learn to make decisions, relate to others, and develop a concern for the community and those in it.

Services and Facilities

Communications

R. R. Furbee, Head

Professors Atkinson, Brandsberg, Frank, and Terry; Associate Professors Baker, Furbee, and Ward; Coordinator Jackson; Specialists Baldwin, Barrett, Brown, Hartman, Havenstein, Holcombe, Kepka, Knapp, Kolawik, McAlavy, Morin, Peterson, Pryor, Snyder, Stadtlander, Tetschner, and Wright; Emeriti: Professors Burke, Graham, Medlin, Thomas, Titus, and Unruh; Associate Professors Buchanan, Jorgensen, McGlashon, and Peck; Assistant Professors Kuehn and Tennant.

The Department of Communications supports K-State Research and Extension and the College of Agriculture with emphasis on the media and computer-based information technology. Information is channeled through newspapers, magazines, publications, circulars and posters, printed annual reports, exhibits, slides, computers, radio, and television. Editing, printing, graphics, slides, distribution, and multi-media services are available.

Included in the Department of Communications is the Weather Data Library and KKSU, an institution-owned public radio station on the air at 580Hz. The K-State Radio network is both a live and audiotape service to Kansas commercial radio stations. Television programs are presented on cooperating television stations, provided for extension agents and specialists, and delivered via satellite videoconferences. Support is provided for the College of Agriculture and K-State Research and Extension personnel for their use of computer-based information technology to deliver educational programs and communicate with each other electronically.

Extension field operations

Southwest Area Office
Paul Hartman, Area Extension Director

Professors Sloderbeck and Thompson; Associate Professor Young; Assistant Professor Alam; Instructor Addison; Director Hartman; Emeriti: Professor Mann; Assistant Professor Blankenhagen.

Northwest Area Office
Reba White, Area Extension Director

Associate Professors Bolze and O'Brien; Assistant Professor Barker; Instructor Curry; Director White; Emeriti: Assistant Professor Mikesell and Overley.

South Central Area Office
J. D. McNutt, Area Extension Director

Professor McNutt; Associate Professors Duncan, Phillips, and Warmann; Emeriti Professors Cox and Van Meter; Associate Professors Albright and McReynolds.

Northeast Area Office
James L. Lindquist, Area Extension Director

Associate Professors Dhuyvetter, Mark, Tokach; Assistant Professor Staggenborg, Instructor White-Huling; Director Lindquist; Emeriti Professors Figurski, Francis, and Newsome; Associate Professor Utermoehlen.

Southeast Area Office
Benny S. Robbins, Area Extension Director

Professors Brazle, Fausett, Kilgore, Lippert, and Robbins; Associate Professor Price; Instructor Domsch; Emerita: Associate Professor Appleby.

County extension offices

There are extension offices in each of the 105 counties.

Outreach

Division of Continuing Education

Elizabeth A. Unger, Vice Provost and Dean of Continuing Education
A. David Stewart, Assistant Dean for Program Development and Summer School and Interim Director, Academic Services
Douglas W. King, Director, Administrative Systems
Lynda Spire, Director, Conferences and Non-Credit Programs
John Allard, Director, Kansas Regents Network (TELENET 2)
Linda Teener, Director, UFM
Jim Miller, Assistant to the Dean

College Court Building
785-532-5566 or 1-800-432-8222
http://www.dce.ksu.edu/dce

The Division of Continuing Education brings together K-State's teaching resources with learners throughout Kansas, the nation, and the world. Courses, conferences, professional updates, and other learning experiences extend university facilities and resources to individuals and organizations. The university makes use of the Internet, Telenet 2 (a partnership of Regents' institutions), the Regents Educational Communications Center (a video production facility), teleconferences, live compressed video (CODEC), satellite downlinks, audio and videotapes, multi-media, face-to-face instruction, and electronic synchronous instruction. Location, once a major obstruction for those seeking degrees, continuing education units, professional updates, or personal enrichment, is being overcome through effective use of technology and services to distance students.

The Division of Continuing Education has a trained staff to assist those seeking academic credit or wishing to earn a degree in a non-traditional way. These people help students who have encountered obstacles to traditional college attendance, such as barriers created by distance, employment, physical handicap, or family responsibilities. Students are guided to faculty members who will advise them in their individual programs of study, and they are helped to select options such as evening or off-campus classes, conferences, short courses, workshops, audio and video courses, telecourses, TELENET 2 courses, World Wide Web courses, correspondence study, credit by examination, internships, or independent study. The division offers credit and non-credit courses year round, including offerings in intersession, summer school, and through the program at Fort Riley.

Intersession

Intersession is conducted during three major breaks in the academic calendar: early January, late May and early June, and August. Annually, many regular and new or experimental credit and noncredit courses are offered in intersession, providing students with an opportunity to examine academic areas not scheduled in their current curricula and faculty members with a means to experiment with new ideas and formats for teaching. Students are encouraged to consult with their advisors to determine if a particular intersession course will fulfill specific degree requirements.

Summer session

The university's summer session is designed to meet the needs of undergraduate and graduate students wishing to accelerate their programs of study or make up courses missed during the fall or spring semesters; teachers and other professionals who are unable to take classes during the regular terms; and high school graduates seeking an early start on college. Regular introductory courses and special programs give high school students the opportunity to establish study habits, become acquainted with the campus and faculty, and adjust to university life. All facilities and services of the university available in the regular semesters are available in the summer, including housing, food service, counseling and testing services, Lafene Health Center, and K-State Student Union recreational programs. Courses are offered throughout the time period from the close of spring semester to the opening of fall semester. Complete and detailed information about summer opportunities may be found in the *Summer School Bulletin* from the Division of Continuing Education published in April and on the division's World Wide Web page (http://www.dce.ksu.edu/dce).

Fort Riley

K-State works in cooperation with the Army Education Center to provide courses to the Fort Riley community at times convenient to military personnel and their dependents. The courses allow the pursuit of associate, bachelor's, and master's degrees in several disciplines, including general social sciences, business administration, and education. Although military personnel have priority, all K-State students are encouraged to investigate this opportunity to pursue their academic goals by visiting the K-State personnel at Fort Riley who are familiar with degree requirements and procedures on acceptance of transfer work. For additional information contact the division office at Fort Riley at 785-784-5930.

TELENET 2

TELENET 2 is a system comprised of a network of desktop video units at teleconferencing centers throughout Kansas that are linked together via telephone lines. A TELEbridge is also available to allow additional temporary teleconferencing classrooms to be established anywhere in Kansas for both credit and noncredit courses and programs, in-service training, meetings, or conferences.

University for Mankind (UFM)

UFM is a community learning center that develops and conducts informal educational opportunities that do not involve prerequisites, grades, or credits. More than 500 programs are available during the three sessions a year. Classes, symposia, forums, and unstructured learning experiences covering a range of human interests, activities, and concerns are offered.

International Agricultural Programs

Robert Hudgens, Assistant Dean
105D Waters Hall
785-532-7034

Since 1956 K-State has extended its outreach mandate to serve people throughout the world. Faculty members have participated in short-courses, technical assistance assignments, and sabbatical activities in India, Nigeria, the Philippines, Botswana, Honduras, and Pakistan. Many of these activities were through development projects funded by USAID, which focused on strengthening agricultural research and extension in universities and government ministries. As part of the Mid-America International Agricultural Consortium and several collaborative research support projects, faculty have also participated in projects in Peru, Morocco, Liberia, Egypt, Tunsia, and Kenya.

Study tours and semester abroad programs offer Kansas students the opportunity for international experiences during their degree programs. In 1997 K-State students visited Mexico, Costa Rica, Panama, Australia, New Zealand, Cote d'Ivoire, Ghana, Holland, Germany, and France. These experiences enhanced understanding of other cultures and improved foreign language skills, increasing the competitiveness of K-State students for jobs in the global economy. K-State is actively seeking additional opportunities for student and faculty international travel through educational partnerships with universities in other countries, private sector internships, and faculty collaborative research activities. Such international engagement enhances the relevance of campus teaching, provides for a more multi-ethnic local community, and benefits agriculture in this state.

Kansas Regents Educational Communications Center

The Educational Communications Center houses resources for the production and distribution of courses and other educational experiences via instructional television, distance education, video conferencing, multimedia, and the Internet. Distribution capabilities include Ku-Band satellite uplinks, fiber optics, Low Power TV, compressed video, video tape, CD-ROM, WWW, and a wide range of other technologies.

Dole Hall also houses studio and control room facilities for instructional use by journalism and mass communications faculty and students, as well as offices and studios for both Cooperative Extension and TELENET 2. Human resources include curriculum design, video and multimedia production, systems engineering, installation and maintenance, academic specialization, long-range budgeting, and project management.

The ECC provides electronic access to and interconnection between each of the Kansas Regents' institutions. The center not only produces and distributes university-level instructional material, but also develops course work and in-service content for public schools, as well as credit and noncredit continuing education material.

University Faculty

About this section

This section lists each faculty member's name, title, academic degrees, and year of first appointment at K-State (in parentheses).

Members of the graduate faculty have an asterisk following their listing.

Faculty list

AAKERÖY, CHRISTER B., Asst. Prof. of Chemistry (1996). MSc 1985. Uppsala U., Sweden; D. Phil. 1990. U. of Sussex, U.K. (*)

ABBOTT, JAMES W., Instr., Education (1983). BA 1956, Drury Col.; MA 1959, U. of Missouri; LHD 1980, Concordia Teachers' Col.

ABBOTT, DARWIN R., Dir., Parking Services (1997). BS 1973, Grove City Col.

ABMEYER, ERWIN, Asst. Prof. Emeritus of Hort. (1934). BS 1933, Kansas St. U.

ACASIO, ULYSSES A., Asst. Prof. of Grain Science and Industry (1978). MS 1972, U. of Philippines; PhD 1979, Kansas St. U.

ACKLEY, R. DOUGLAS, Asst. Controller, Cashiers and Loans (1978). BS 1971, Kansas St. U.

ADAMCHAK, DONALD J., Prof. of Sociology (1978). BA 1973. Ohio U.; MA 1975, Western Kentucky U.; PhD 1978, Bowling Green St. U. (*)

ADAMS, ALBERT W., Prof. Emeritus of Animal Sciences and Industry; Ext. Specialist, Poultry Sciences (1962). BS 1951, MS 1955, Kansas St. U.; PhD 1964, S. Dakota St. U. (*)

ADAMS, BARRY, Captain, US Army; Instr. of Military Science (1995). BA 1989, MA 1993, U. of Missouri.

ADAMS, JAMES P., Assoc. Prof.; Ext. Specialist, 4–H Youth Programs, (1976). BA 1969, Kansas St. U.; MS 1971, Oklahoma St. U.

ADAMS, MARJORIE, Assoc. Prof. Emerita of English (1954). BA 1941, Louisiana Polytechnic; MA 1948, PhD 1951, U. of Texas. (*)

ADAMS, WILLIAM J., Assoc. Prof. of Journalism and Mass Communications (1985). BA 1976, Brigham Young U.; MA 1980, Ball St. U.; PhD 1988, Indiana U. (*)

ADDISON, CONALL E., Inst., Ext. Specialist, 4–H Youth Programs, Southwest (1995). BS 1966, Tulsa U.; BS 1970, MS 1972, Oklahoma St. U.

ADOLPH, CAROL, Ticket Manager, Intercollegiate Athletics (1955).

AHLVERS, DAVID A., Prof. of Arts, Sciences, and Business, Col. of Tech. and Aviation (1982). AA 1970, Cloud County Comm. Col.; BS 1972, MS 1974, Fort Hays St. U.; CPA.

AHLVERS, SCOTT D., Co. Ext. Agent, Ag, Cheyenne Co., St. Francis (1996). BS 1996, Kansas St. U.

AKIN, JAMES N., Asst. Dir. Emeritus, Career and Employment Services (1966). BS 1960, MS 1964, Kansas St. U.

AKINS, RICHARD GLENN, Prof. of Chemical Engineering (1963). BS 1957, MS 1958, U. of Louisville; PhD 1962, Northwestern U. (*)

AKKINA, KRISHNA RAO, Assoc. Prof. of Economics (1972). BA 1963, U. of Andhra; MA 1965, Delhi School of Economics; PhD 1972, U. of Minnesota. (*)

ALBRIGHT, KENNETH B., Assoc. Prof. Emeritus; Ext. Specialist, Community Dev., South Central (1955). BS 1952, Kansas St. U.; MEd 1967, Colorado St. U.

ALEXANDER, LOREN R., Assoc. Prof. Emeritus of Modern Languages and Education (1965). BM 1951, Southwestern Col.; MA 1954, Colorado St. Col. of Educ.; MA 1965, PhD 1971, Michigan St. U. (*)

ALEXION, PETER A., Co. Ext. Agent, Ag, Jewell Co., Mankato (1997). BS 1996, MS 1997, Kansas St. U.

ALGER, JEFF, Asst. Prof., Reference, KSU Libraries (1993). MLS 1993, U. of Michigan; BS 1990, U. of Alaska.

ALGRIM, EUGENE E., District Ext. Agent, Agr., Walnut Creek Dist. 2, LaCrosse (1976). BS 1965, MS 1972, Kansas St. U.

ALLARD, JOHN W., Dir. for Academic Services (1991). BA 1968, Colorado State U.; MED 1979, N.W. Oklahoma State U.

ALLEN, BARBARA J., Academic Advisor, Intercollegiate Athletics (1993). BA 1977, Western St. Col.; MS 1990, Central Michigan U.

ALLEN, BEN W., Co. Ext. Agent, Ag, Chautauqua Co., Sedan (1997). BS 1979, Montana St. U.

ALLEN, DAVID, Assoc. Prof., Chair, Library/Network Services (1987). BA 1978, MLS 1982, Brigham Young U.

ALLEN, ERIC B., Farm Management Association Fieldman (1973). BS 1971, MS 1972, Kansas St. U.

ALLEN, SUSAN L., Interim Dir., Women's Resource Ctr. (1993). BA 1970, Wichita St. U.; MS 1975, Kansas St. U.; PhD 1980, U. of Kansas.

ALLOWAY, JAY E., Assoc. Operating Systems Specialist, Computing and Telecommunications Activities (1970). BS 1970, Kansas St. U.

AL-KHATIB, KASSIM, Assoc. Prof. of Agronomy; Weed Physiology Research, Agr. Exp. Sta. (1996). BS 1971, MS 1977, U. of Baghdad; PhD 1984, Kansas St. U. (*)

ALTHAUSER, CRAIG, Farm Management Association Fieldman (1995). BS 1993, MS 1995, The Ohio St. U.

ALVAREZ, VINCENT L., Adjunct Assoc. Prof. of Anatomy (1991). MD 1972, Loyola U.

AMBROSIUS, MARGERY, Assoc. Prof. Emeritus of Political Science (1986). BA 1964, MA 1967, U. of Illinois; MA 1984, PhD 1986, U. of Nebraska. (*)

AMOS, JOHN M., Adjunct Prof., Industrial and Manufacturing Systems Engineering (1987). BS 1956, MS 1957, Kansas St. U.; PhD 1960, Ohio St. U.

AMSTEIN, DEANNA K., Math Specialist, Academic Assistance Ctr. (1987). BS 1962, Kansas St. U.

ANDEREGG, MARVIN K., Co. Ext. Agent, 4–H, Labette Co., Altamont (1969). BS 1969, Kansas St. U.

ANDERSON, BARBARA G., Asst. Prof. of Arch. and Planning (1993). BArch 1983, Kansas St. U.

ANDERSON, CATHY L., Assoc. Prof. of Speech (1980). BA 1974, Lyndon St. Col.; MFA 1980, U. of Connecticut. (*)

ANDERSON, DAWN L., Assoc. Dir., Affirm. Action Office (1993). BS 1980, MS 1985, Iowa St. U.

ANDERSON, ELINOR A., Prof. Emerita; Ext. Specialist, Family Economics (1963). BS 1939, MS 1952, Kansas St. U.

ANDERSON, FRED, Computer Information Specialist, Communications (1990). BA 1971, BFA 1991, Kansas St. U.

ANDERSON, NEIL V., Interim Dean of Veterinary Medicine; Prof. Emeritus of Food Animal Medicine, Dept. of Clinical Sciences; Clinical Research Scientist (1967). BS 1953, Mankato St. Col.; BS 1959, DVM 1961, PhD 1968, U. of Minnesota; Diplomate 1972, American Col. of Vet. Internal Medicine. (*)

ANDERSON, PHILLIP D., Instr. of Speech (1980). MA 1966, Indiana U.

ANDERSON, REID R., Major US Air Force, Asst. Prof. of Aerospace Studies (1996). BA 1986, Kansas St. U.; MA 1996, Bowie St. U.

ANDERSON, RODNEY L., Assoc. Prof. Emeritus of Electronic Engineering Tech. (1984). BSEE 1958, Kansas St. U.; Professional Engineer.

ANDREWS, GORDON, Assoc. Prof. of Pathology (1992). BS 1975, Cornell; DVM 1984, Oklahoma St. U. (*)

ANDREWS, MARY ANNE, Administrative Asst., Athletics (1989). BSE 1980, MS 1984, Oklahoma St. U.

ANDRIES, KENNETH M., Co. Ext. Agent, Ag, Sheridan Co., Hoxie (1996). BS 1990, Mississippi St. U.; MS 1992, Louisiana St. U.; PhD 1996, Kansas St. U.

ANDRESEN, DANIEL A., Asst. Prof. of Computing and Information Sciences (1997). BS 1990, Westmount Col.; MS 1992, California Polytechnic St. U.; PhD 1997, U. of California.

ANDRUS, DAVID M., Prof. and Head of Marketing and International Business (1983). BS 1976, Oklahoma St. U.; MA 1978, U. of Hawaii; PhD 1981, U. of Iowa. (*)

ANDRUS, LYNDA E., Asst. Prof. of Art (1983). BFA 1978, U. of Hawaii; MA 1979, MFA 1981, U. of Iowa. (*)

ANGLE, DENNIS R., Asst. Prof., Education (1979). BA 1968, MS 1974, Emporia St. U.; PhD 1984, Kansas St. U.

ANNIS, PATTY SMITH, Asst. Prof. Emeritus of Clothing, Textiles, and Interior Design; Agr. Exp. Sta. (1958). BS 1955, Mississippi St. Col. for Women; MS 1957, U. of Tennessee. (*)

ANSDELL, ORA JOYE, Assoc. Prof. Emerita of English (1946). BS 1932, Kansas St. U.; MA 1939, U. of Michigan; BLS 1946, U. of Chicago; PhD 1956, U. of Colorado. (*)

APEL, J. DALE, Prof. Emeritus; Ext. 4–H Youth Specialist (1962). BS 1950, Kansas St. U.; MS 1961, The American U.; PhD 1966, U. of Chicago. (*)

APPEL, JON A., Adjunct Asst. Prof. of Plant Pathology (1989). BS 1979, Fort Hays St. U.; MS 1982, Clemson U.

APPL, FREDRIC CARL, Prof. Emeritus of Mechanical and Nuclear Engineering (1960). BS 1954, MS 1955, PhD 1958, Carnegie–Mellon U. (*)

APPLEBY, MARIELLEN J., Assoc. Prof. Emerita; Ext. Home Economist, Southeast (1955). BS 1955, Kansas St. U.; MS 1965, U. of Maryland.

ARAMOUNI, FADI M., Assoc. Prof. of Animal Sciences and Industry; Ext. Specialist, Animal Sciences and Industry (1989). BS 1977, MS 1980, American U. of Beirut, PhD 1986, Louisiana St. U. (*)

ARATA, JOSEPH, Visiting Asst. Prof. of Agricultural Economics; Agribusiness (1996). BS 1969, St. Peters Col.; PhD 1994, Kansas St. U.

ARCHER, ALLEN W., Assoc. Prof. of Geology (1989). BS 1975, Oregon St. U.; AM 1979, PhD 1983. U. of Indiana. (*)

ARCHER, DWAINE, Dir. Fire Safety Inspections (1996). BS 1991, U. of Maryland.

ARCK, WILLIAM, Dir. of Alcohol and Other Drug Education Service (1982). BS 1978, MS 1979, Kansas St. U.

ARENS, ROBERT M., Asst. Prof. of Arch. (1992). BSArch 1981, MArch 1984, U. of Michigan. Registered Architect.

ARHANGEL'SKII, ALEXANDER V., Adjunct Prof. of Mathematics, D.Sci. 1966, Moscow St. U. (*)

ARMAGOST, JAMES L., Assoc. Prof. of Speech (1973). BA 1963, U. of California, Santa Barbara; MA 1972, PhD 1973, U. of Washington, Seattle. (*)

ARMBRUST, DEAN V., Assoc. Prof. of Agronomy; Research Soil Scientist, Wind Erosion Research Unit, USDA, ARS (1968). BS 1960, MS 1961, PhD 1973, Kansas St. U. Adjunct appt. (*)

ARNDS, PETER, Asst. Prof. of Modern Languages (1995). MA 1990, Ludwig Maximilians U. of Munich; PhD 1995, U. of Toronto. (*)

ARNOLD, DAVID, Asst. Prof. of Civil Engineering Tech (1995). BS 1975, MS 1986, Oklahoma St. U.

ARNOLD, JO ELLEN, Co. Ext. Agent. 4–H, Franklin Co., Ottawa (1977). BS 1977, Kansas St. U.

ARNS, MARK J., Assoc. Prof. of Animal Sciences and Industry; Ext. Specialist, Horses (1989). BS 1983, U. of Wisconsin; MS 1986, PhD 1989, Texas A&M. (*)

ARTHUR, CHARLES S., Instr. of Accounting (1971). BS 1967, Kansas St. U.; MLL 1970, New York U.

ARTHUR, FRANKLIN H., Adjunct Assoc. Prof. of Entomology; USDA Grain Marketing Research Ctr., Stored Grain Insect Pest Management (1995). BS 1976, U. of Florida; PhD 1985, North Carolina St. U. (*)

ASBURY, TOM, Head Basketball Coach (1994). BS 1968, Wyoming; MS 1974, Colorado U.

ASENETA, LYDIA, Assoc. Prof. Emerita of Speech (1967). BS 1949, MA 1958, The National Teachers' Col. of the Philippines; MA 1968, Kansas St. U.

ASLIN, RAYMOND G., Prof. of Forestry; St. Forester (1975). BS 1972, MS 1975, U. of Missouri.

ATCHISON, FRED D., Assoc. Prof. Emeritus; District Forester, Northeast (1964). BS 1954, U. of Georgia; MS 1972, Fort Hays St. U.

ATCHISON, ROBERT L., Asst. Forester; District Forester, Northeast (1990). BS 1981, U. of Missouri.

ATKINSON, C. HARRY, Assoc. Prof. Emeritus of Agronomy (1949). BS 1931, MS 1933, Pennsylvania St. U.

ATKINSON, DAISY E., Assoc. Prof. Emerita of Foods and Nutrition; Ext. Specialist, Human Nutrition (1959). BA 1938, MS 1953, Iowa St. U.

ATKINSON, ERIC J., Prof.; Communications Specialist, Communications (1983). BS 1978, MS 1982, Kansas St. U.

AUCKLY, DAVID, Asst. Prof. of Mathematics (1997). PhD 1991, U. of Michigan. (*)

AUST, AIMEE R., Co. Ext. Agent, Hort., Harvey Co., Newton (1997). BS 1997, Kansas St. U.

AUTEN, SUZANNE M., Admin. Asst. to the Provost (1993). BS 1986, Kansas St. U.

AZADIVAR, FARHAD, Prof. of Industrial and Manufacturing Systems Engineering (1990). Dir. of Advanced Manufacturing Inst. (1991). BS 1970, Tehran U., Iran; MS 1972, Asian Inst. of Tech.; PhD 1980, Purdue U. (*)

AZER, NAIM ZAKI, Prof. Emeritus of Mechanical and Nuclear Engineering (1958). BS 1950, MS 1954, U. of Alexandria, Egypt; PhD 1959, U. of Illinois. (*)

BABCOCK, MICHAEL W., Prof. of Economics (1972). BS, BA 1967, Drake U.; MA 1969, PhD 1973, U. of Illinois. (*)

BAGBY, LAURIE, Assoc. Prof. of Political Science (1991). BA 1985, MA 1987, PhD 1990, Northern Illinois U. (*)

BAILEY, GERALD D., Prof., Education (1972). BS 1966, MEd 1969, EdD 1972, U. of Nebraska. (*)

BAILIE, WAYNE E., Prof. Emeritus of Microbiology, Dept. of Pathology and Microbiology; Research Bacteriologist (1972). BS 1957, DVM 1957, PhD 1969, Kansas St. U.; Diplomate 1980, American Col. of Vet. Microbiologists. (*)

BAJAJ, MUKTI, Asst. Spec., ISSA, KSU Libraries (1996). Bsc 1981, PhD 1987, Punjab Agricultural U., India.

BAKER, BARBARA, Academic Service Coord., Educational Supportive Services (1994). BS 1987, MS 1990, Kansas St. U.

BAKER, JAMES E., Adjunct Prof. of Entomology; USDA Grain Marketing Research Ctr., Stored Grain Insect Pest Biological Control (1995). BS 1960, Heidelberg Col.; MS 1962, U. of Delaware; MS 1993, Kansas St. U.; PhD 1969, U. of Wisconsin. (*)

BAKER, JON CHRIS, Co. Ext. Agent. Agr., Cowley Co., Winfield (1985). BS 1982, Kansas St. U.; MS 1985, Oklahoma St. U.

BAKER, LYMAN A., JR., Instr. of English (1972). BA 1964, U. of Missouri; MA 1968, Stanford U.

BAKER, RICHARD P., Assoc. Prof.; Communications Specialist, Communications (1977). BS 1972, MS 1983, Kansas St. U.

BALDING, JAMES L., Prof. Emeritus of Grain Science and Industry; Ext. Specialist, Formula Feeds Manufacturing (1965). BS 1960, MS 1971, Kansas St. U. (*)

BALDWIN, WILL G., Asst., Systems Engineer, Communications (1993).

BALL, HERBERT DEAN, Prof. Emeritus of Mechanical and Nuclear Engineering (1958). BS 1952, MS 1958, U. of Nebraska; PhD 1972, Kansas St. U. (*)

BALLOU, RUSSELL S., Senior Communications Specialist, Communications (1973). BS 1971, Kansas St. U.

BANNER, CHRIS, Asst. Instr. of Music. MM 1983, Kansas St. U. (*)

BANBURY, EVANS E., Prof. Emeritus, Colby Branch Agr. Exp. Sta. (1946). BS 1940, Kansas St. U.

BANDEL, MILA L., Co. Ext. Agent, Family and Consumer Sciences, Cheyenne Co., St. Francis (1993). BS 1990, Kansas St. U.

BAPTISTA, JOHN, Asst. Baseball Coach (1993). BA 1976, Cal St.–Sacramento; MA 1989, St. Mary's College.

BAPTISTE, H. PRENTICE, Prof. of Education and Assoc. Dir. of Science Education Center (1994). BS 1961, Lamar St. College of Tech.; MAT 1966, EdD. 1968, Indiana U. (*)

BARBER, ARNOLD V., Co. Ext. Agricultural Agent Emeritus, Atchison Co., Effingham (1955). BS 1934, U. of Missouri.

BARGEN, BRENT, Asst. Men's Basketball Coach (1997). BS 1993, Doane Col.

BARK, LAURENCE DEAN, Prof. Emeritus of Physics; Communications, Climatologist, Agr. Exp. Sta. (1956). BS 1948, MS 1950, U. of Chicago; PhD 1954, Rutgers U. (*)

BARKER, DIANE, Asst. (Transcript) Specialist (1986). BA 1974, MA 1986, Kansas St. U.

BARKER, WALTER R., Asst. Prof.; Ext. Specialist, 4–H Youth Programs, Northwest (1995). BS 1980, Tuskegee; MS 1990, PhD 1994, U. of Minnesota.

BARKLEY, ANDREW P., Prof. of Agricultural Economics, Agr. and Public Policy (1988). BA 1984, Whitman Col., Wash.; MA 1986, PhD 1988, U. of Chicago. (*)

BARKLEY, L. ANN, Co. Ext. Agent Emerita, Family and Consumer Sciences, Shawnee Co., Topeka (1974). BS 1969, Kansas St. U.

BARKLEY, THEODORE M., Prof., Division of Biology; Curator of the Herbarium; Taxonomist, Agr. Exp. Sta. (1961). BS 1955, Kansas St. U.; MS 1957, Oregon St. U.; PhD 1960, Columbia U. (*)

BARNABY, G. A. (ART), JR., Prof. of Agricultural Economics; Ext. Agricultural Economist, Farm Management (1979). BS 1973, Fort Hays St. U.; MS 1976, New Mexico St. U.; PhD 1979, Texas A&M. (*)

BARNARD, KENNETH, Prof. of Aviation (1977). AA 1967, Riverside City Col.; AT 1977, Kansas Tech. Inst.; BS 1977, Kansas St. U.; MS 1980, Pittsburg St. U.; Licenses: Airframe and Powerplant, All flight ratings, airplane and helicopter.

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BARNES, HELEN L., Co. Ext. Home Economist Emerita, Linn Co., Mound City (1964). BS 1949, U. of Missouri.

BARNES, JOHN H., Co. Ext. Agricultural Agent Emeritus, Harvey Co., Newton (1953). BS 1951, Kansas St. U.

BARNES, PHILIP L., Asst. Prof. of Biological and Agricultural Engineering (1980). BS 1974, U. of Wyoming; MS 1977, PhD 1980, Texas A&M.

BARNES, SIDNEY M., Asst. Prof. of Arts, Sciences, and Business, Col. of Tech. and Aviation (1981). BA 1973, MA 1973, MA 1975, Loyola U.

BARNETT, CAMILIA, Asst. Prof., Education (1990). BS 1975, U. of California–Berkeley; MS 1977, U. of Alabama–Birmingham; PhD 1980, Kansas State U.

BARNETT, FRANCIS L., Prof. Emeritus of Agronomy (1956). BS 1952, McGill U., Canada; MS 1954, PhD 1956, Pennsylvania St. U. (*)

BARNETT, MARK A., Prof. of Psychology (1975). BA 1971, PhD 1975, Northwestern U. (*)

BARNHILL, CLAUDE A., Adjunct Asst. Prof. of Foods and Nutrition (1989). BS 1953, MD 1956, U. of North Carolina.

BARNUM, WILLIAM D., Dir. of Facilities (1984). BS 1956, Kansas U.

BARON, JANE, Admin. Asst. to the Dean, Col. of Tech. and Aviation (1995). BA 1977, Furman U.; MA 1987 Webster U.

BARR, MICHAEL G., Adjunct Instr. of Dietetics (1987). BS 1978, U. of Texas at Austin; MS 1981, Southwest Texas St. U.

BARRETT, ANNA M., Asst., Editor, Communications (1993). BS 1993, Kansas St. U.

BARRETT, ELIZABETH B., Asst. Prof. of Hotel, Restaurant, Institution Management and Dietetics (1991). BA 1971, Stephen F. Austen St. U.; MS 1983, U. of Southern Mississippi; PhD 1993, Kansas St. U. (*)

BARRETT, ERNIE, Dir. of Dev. (1990). MS 1956, Kansas St. U.

BARRY, CATHERINE C., Assoc. Clinical Dir., Lafene Health Ctr. (1980). BS 1968, Ohio St. U.; MS 1993, Kansas St. U.

BARSTOW, THOMAS J., Assoc. Prof. of Kinesiology (1996). B.S. 1974, MA 1978, PhD 1985, U. of California–Davis.

BARTLETT, ANDY, Asst. Sports Information Dir. (1997). BS 1995, Kansas St. U.

BARTLETT, CLARENCE E., Instr. Emeritus; Ext. Economist, Farm Management (1947). BS 1929, U. of Nebraska.

BARTON, DAVID G., Prof. of Agricultural Economics; Agricultural Economist, Business Management (1976). BS 1967, Utah St. U.; MS 1970, PhD 1974, Purdue U. (*)

BARTON, SUSAN, Telecommunications Administrator, TELENET (1988). BA 1988, Kansas St. U.

BARTON-DOBENIN, JOSEPH, Prof. Emeritus of Management (1958). BS 1956, MA 1958, PhD 1966, U. of Nebraska. (*)

BARUCCHIERI, PAOLO, Adjunct Prof. of Arch., Landscape Arch. and Regional and Community Planning, and Interior Arch. (1991). BArch 1959, U. of Florence, Italy; MFA 1970, U. of Northern Colorado.

BASARABA, RANDALL J., Asst. Prof. of Vet. Diagnosis (1991). BS 1981, DVM 1985, PhD 1991, Washington St. U. (*)

BASHAM, EDWIN, Instr., Computing and Information Sciences (1976). BS 1946, U.S. Military Academy; MS 1959, Georgia Inst. of Tech.

BASSETTE, RICHARD, Prof. Emeritus of Animal Sciences and Industry; Dairy Foods Research Chemist, Agr. Exp. Sta. (1958). BS 1952, MS 1955, PhD 1958, U. of Maryland.

BATES, CHARLES T., Prof. Emeritus; Ext. Specialist, 4–H Programs (1956). BS 1951, Oklahoma A&M; MS 1960, U. of Wisconsin.

BATES, DOUGLAS, Assoc. Prof. and Chair, Library Access Services and Instructional Support Services (1988). BS 1983, MLS 1987, Brigham Young U.

BATES, LYNN S., Adjunct Prof. of Foods and Nutrition (1991). BS 1962, Heidelberg College; MS 1966, Purdue U.; PhD 1972, Kansas St. U. (*)

BAUERLE, CAROL A., Co. Ext. Agent, Brown Co., Hiawatha (1979). BS 1979, Kansas St. U.

BAUERNFEIND, ROBERT J., Prof. of Entomology, Ext. Specialist, Entomolology (1978). BS 1967, MS 1976, PhD 1978, U. of Wisconsin. (*)

BAUGHAN, KIRK, Constit. Dev. Officer, KSU Foundation (1990). BA 1974, Kansas St. U.

BAUGHER, EARL EUGENE, Assoc. Prof. Emeritus of Biological and Agricultural Engineering (1967). BS 1958, MS 1964, Kansas St. U.

BAURES, PAUL W., Asst. Prof. of Chemistry (1997). BS 1985, Winona St. U.; MS 1988, PhD 1995, U. of Minnesota (*)

BAYBUTT, RICHARD C., Asst. Prof. of Foods and Nutrition (1994). BS 1978, Syracuse U.; MS 1983, U. of Maryland; PhD 1992, Penn St. U. (*)

BEATTY, DANIEL D., Prof. and VP Emeritus for Business Affairs (1956). AB 1947, Hope Col.; MBA 1949, U. of Michigan.

BECHTEL, DONALD B., Adjunct Asst. Prof. of Biology; Research Biologist, Grain Marketing Research Cntr. (1983). BS 1971, MS 1974, Iowa St. U.; PhD 1982, Kansas St. U. (*)

BECK, B. TERRY, Assoc. Prof. of Mechanical and Nuclear Engineering (1979). BS 1971, MS 1974, PhD 1978, Oakland U. (*)

BECK, GLENN H., VP Emeritus for Agr. (1936). BS 1936, U. of Idaho; MS 1938, Kansas St. U.; PhD 1950, Cornell U.

BECKER, KRISTIN, Asst. Women's Basketball Coach (1998). BS 1990, Vanderbilt; MS 1994, Southern Illinois U.

BECKMAN, JOHN H., Co. Ext. Agent, Agr.; Scott County, Scott City (1992). BS 1982, Panhandle St. U.

BEEMAN, KEITH B., Assoc. Prof. Emeritus of Food Animal Medicine (1977). BS 1958, DVM 1958, Kansas St. U.; Diplomate 1981, American Col. of Theriogenology.

BEEMAN, RICHARD W., Adjunct Prof. of Entomology; USDA Grain Marketing Research Cntr. (1980). BS 1970, MS 1974, PhD 1977, U. of Wisconsin. (*)

BEGGS, MARY AGNES, Dir. of Member Services, K-State Alumni Association (1997). BS 1986, Kansas St. U.; MBA 1988, U. of Colorado.

BEHNKE, KEITH C., Prof. of Grain Science and Industry; Feed Tech. Research Scientist, Agr. Exp. Sta. (1977). BS 1968, MS 1973, PhD 1975, Kansas St. U. (*)

BEJOT, DENNIS D., Co. Ext. Dir., Douglas Co., Lawrence (1989). BS 1966, MS 1968, U. of Nebraska; PhD 1981, Iowa St. U.

BELL, PEGGY, Asst. Instr., KSU Libraries (1998).

BELL, WARREN E., Co. Ext. Agent, Agr., Coffey Co., Burlington (1974). BS 1974, Kansas St. U.

BELSHE, DANA J., Co. Ext. Agent, Agr., Sherman Co., Goodland (1982). BS 1979, Kansas St. U.

BEN-ARIEH, DAVID, Assoc. Prof. of Industrial and Manufacturing Systems Engineering (1990). BS 1980, MS 1982, Ben-Gurion U.; PhD 1985, Purdue U. (*)

BEN-ITZHAK, ITZHAK, Assoc. Prof. of Physics (1988). PhD 1986, Technion, Israel. (*)

BENNETT, A. G., Assoc. Prof. of Mathematics (1988). BS 1981, Colorado St. U., MA 1982, PhD 1985, Princeton U. (*)

BENNETT, MICHAEL A., Academic Advisor, Arch. (1996). BA 1978, U. of California; MS 1991, PhD 1995, Kansas St. U.

BENSON, DOUGLAS K., Assoc. Prof. of Modern Languages (1980). BA 1966, New Mexico St. U.; MA 1968, PhD 1973, U. of New Mexico. (*)

BENSON, JANET, Assoc. Prof. of Anthropology (1972). BA 1964, Arizona St.; MA 1969, PhD 1974, Brandeis U. (*)

BENTON, SHERRY, Psychologist, Internship Training Dir., U. Counseling Services (1990). MS 1985, PhD 1991, U. of Kansas.

BENTON, STEPHEN L., Prof., Education (1983). BA 1977, MA 1980, PhD 1983, U. of Nebraska. (*)

BERG, ERIC J., Asst. Forester; District Forester, South Central (1995). BS 1993, Colorado St. U.

BERGEN, LORI, Asst. Prof. of Journalism and Mass Communications (1994). BS 1981, MS 1983, Kansas St. U; PhD 1991, Indiana U. (*)

BERGEN, M. BETSY, Assoc. Prof. of Family Studies and Human Services (1966). AB 1949, Ottawa U.; MS 1964, PhD 1972, Kansas St. U. (*)

BERKOW, DANIEL N., Psychologist, U. Counseling Services (1993). MA 1989, Ph.D. 1995, U. of Georgia.

BERNARDO, DANIEL J., Prof. and Head of Agricultural Economics; Production Economics, Farm Management, Natural Resources, Agr. Exp. Sta. (1995). BS 1980, U. of California–Davis; PhD 1985, Washington St. U. (*)

BERTRAND, KAY C., Adjunct Clinical Instr. of Medical Tech. (1994). BS 1974, MA 1977, U. of Missouri.

BESTHORN, JODI L., Co. Ext. Agent, 4–H Sedgwick Co., Wichita (1980). BS 1978, Sterling Col.

BETTON, MATTHEW T., Adjunct Teaching Assoc. of Music (1978). BA 1938, Kansas St. U.

BEYER, R. SCOTT, Asst. Prof. of Animal Science, Ext. Poultry Science Spec. (1993). BS 1983, Texas A & M; MS 1988, PhD 1992, U. of Georgia. (*)

BHALLA, CHANDER P., Prof. of Physics (1966). BS 1952, BSc 1954, MS 1955, Punjab U.; PhD 1960, U. of Tennessee. (*)

BHANDARI, ALOK, Asst. Prof. of Civil Engineering (1998). BS 1990, Jawaharlal Nehru Technological U.; MS 1992, PhD 1995, Virginia Polytechnic Inst. and St. U.

BIBY, VIRGIL H., Co. Ext. Agent Emeritus, Agr., Butler Co., El Dorado (1966). BS 1957, Oklahoma St. U.

BIDWELL, ORVILLE W., Prof. Emeritus of Agronomy (1950). AB 1940, Oberlin Col.; BS 1942, PhD 1949, Ohio St. U. (*)

BIEBERLY, FRANK G., Prof. Emeritus; Section Leader and Ext. Specialist, Crops and Soils (1941). BS 1938, MS 1949, Kansas St. U.

BIEHL, FLORENCE F., Co. Ext. Agent, Family and Consumer Sciences, Johnson Co., Olathe (1962). BS 1951, Kansas St. U.

BIERE, ARLO W. , Prof. of Agricultural Economics; Natural Resources; Regional and Community Dev., Agr. Exp. Sta. (1968). BS 1963, U. of Nebraska; MA 1967, PhD 1968, U. of California. (*)

BIETAU, STEVE, Head Tennis Coach (1984). BS 1979, Doane Col.

BILES, BERTRAM R., Assoc. Dir., Military Training Lands Management Program (1972). BA 1963, PhD 1976, Kansas St. U.

BILLER, DAVID S., Assoc. Prof. of Clinical Sciences (1994). BS 1976, North Carolina State; DVM 1980, Auburn U. (*)

BINGHAM, ROBERT, Prof. of Arts, Sciences, and Business, Col. of Tech. and Aviation (1973). BS 1957, Northeast Missouri St. U.; MS 1965, St. Louis U.

BINKOWSKI, DONNA, Asst. Prof. of Modern Languages (1992). BA 1986, DePauw U; MA 1989, PhD 1992, U. of Illinois.

BISSEY, CHARLES R., Prof. of Architectural Engineering and Construction Science (1969). BS 1957, Colorado St. U.; MArch 1961, Kansas St. U.; Professional Engineer, 1979. (*)

BISWELL, CLIFFORD R., Prof. Emeritus; Ext. Forester, Fire Control Leader (1957). BS 1954, MS 1965, U. of Missouri.

BLACK, RICHARD D., Assoc. Prof. Emeritus of Biological and Agricultural Engineering, Ext. Irrigation Engineer (1982). BS 1952, MA 1953, PhD 1961, U. of Illinois; Professional Engineer, Illinois, 1957.

BLACKMAN, MERRILL E., Assoc. Prof. Emeritus of Architectural Engineering and Construction Science (1965). BS 1949, Kansas St. U.; Registered Architect, 1955; Professional Engineer, 1949.

BLACKWILL, CORA A., Co. Ext. Home Economist Emerita, Ottawa Co., Minneapolis (1948). BS 1931, Fort Hays St. U.

BLAIR, ANDREA, Learning Disability Specialist, Disabled Student Services (1994). MEd 1987, U. of Georgia.

BLAIR, JOHN M., Asst. Prof. of Biology; Soil Ecologist Agr. Exp. Sta. (1992). BS 1980, MS 1983, Kent St. U.; PhD 1987, U. of Georgia. (*)

BLAIR, W. LAWARENCE, Co. Ext. Agent Emeritus, Agr., Linn Co., Mound City (1960). BS 1954, Oklahoma St. U.

BLAKESLEE, JULIE D., District Ext. Agent, Family and Consumer Sciences, Walnut Creek Dist. 2, Ness City (1981). BS 1965, Kansas St. U.

BLANKENHAGEN, ELMER W., Asst. Prof. Emeritus; Coord., Schedules and Reports (1950). BS 1948, Kansas St. U.

BLASI, DALE A., Assoc. Prof. of Animal Sciences and Industry, Ext. Specialist, Livestock Production (1990). BS 1984, MS 1986, Colorado U.; PhD, U. of Nebraska. (*)

BLECHA, FRANK, Prof. of Immunophysiology; Research Stress Physiologist (1981). BS 1971, MS 1977, U. of Idaho; PhD 1981, Washington St. U. (*)

BLEVINS, OLETHA L., Co. Ext. Home Economist Emerita, Douglas Co., Lawrence (1959). BS 1939, Iowa St. U.

BLOOMQUIST, LEONARD E., Assoc. Prof. of Sociology (1989). BA 1976, Creighton U.; MS 1979, PhD 1986, U. of Wisconsin Madison. (*)

BLOOMQUIST, MARGARET CHRISTINE, Instr. Emerita, Education (1967). AB 1941, Bethany Col.; MBA 1949, U. of Denver.

BLUME, WILLIS L., Co. Ext. Agricultural Agent Emeritus, Haskell, Sublette (1948). BS 1942, Texas A&M.

BLYTHE, MARIE M., Coord., Planning and Reporting (1995). BS 1964, MS 1965, PhD 1995, Kansas St. U.

BOCKUS, WILLIAM W., Prof. of Plant Pathology; Research Cereal Crop Pathologist, Agr. Exp. Sta. (1978). BS 1972, U. of California; MA 1974, California St. U.; PhD 1978, U. of California. (*)

BODE, MARILYN, Asst. Prof. of Clothing, Textiles, and Interior Design (1994). BS 1967, MS 1982, PhD 1986, Iowa St. U. (*)

BOGER, CARL A., Asst. Prof. of Hotel, Restaurant, Institution Management and Dietetics (1995). BS 1984, MS 1988, PhD 1993, Purdue U. (*)

BOHN, BETH, Campus News Coord., News Services (1996). BA 1980, Kansas St. U.

BOLAND, MICHAEL, Asst. Prof. of Agricultural Economics; Agribusiness (1996). BA 1986, U. St. Thomas; MS 1991, PhD 1995, Purdue U.

BOLDENOW, GARRY, Instr., Aviation (1991). BS 1986, Bethel Col. Licenses: FFA repairman certificate; all commercial flight ratings, airplane and helicopter.

BOLL, CATHY, Assoc. Dir., Fiscal Affairs, Col. of Tech. and Aviation (1991). BSBA, 1973, Pittsburg State Univ., MBA, 1976, Kansas State University.

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BOLLMAN, STEPHAN RAY, Prof. of Family Studies and Human Services; Agr. Exp. Sta.; Dir. of Family Center (1966). BS 1957, MS 1963, PhD 1966, Iowa St. U. (*)

BOLSEN, KEITH K., Prof. of Animal Sciences and Industry; Beef Cattle Research Nutritionist, Agr. Exp. Sta. (1971). BS 1966, MS 1967, U. of Illinois; PhD 1971, U. of Nebraska. (*)

BOLSEN, NANCY F., Dir., Adult Student Services (1987). BS 1969, Nebraska Wesleyan U.; MS 1981, PhD 1985, Kansas St. U.

BOLTON, TIMOTHY, Assoc. Prof. of Physics (1994). BS 1982, Stanford U.; PhD 1988, Mass. Inst. of Tech.. (*)

BOLZE, RONALD P., JR., Assoc. Prof. of Animal Sciences and Industry; Ext. Specialist, Livestock Production, Northwest; BS 1976, Penn St. U.; PhD 1985, Kansas St. U.

BOND, CANDACE M., Instr., Education (1984). BA 1968, Michigan St. U.; MS 1988, Kansas St. U.

BONSER, CURTIS S., Adjunct Clinical Assoc. (1984). BS 1963, Pennsylvania St. U.; DMD 1967, U. of Pennsylvania.

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BORCHERS, VICKY L., Asst. Prof. of Interior Arch. (1995). BIA 1977, Kansas St. U; MArch 1982, Texas A&M.

BOROVIK, ANDREW S., Asst. Prof. of Chemistry (1993). BS 1981, Humboldt St. U.; PhD 1986, U. North Carolina, Chapel Hill. (*)

BORSDORF, ROE E., Acting Dir. of International Agricultural Programs and Food and Feed Grains Inst.; Senior Agricultural Economist, Agricultural Economics (1984). BS 1957, MS 1971, PhD 1975, Kansas St. U.

BORST, WILLIAM H., Assoc. Prof. Emeritus; Ext. Specialist, 4-H Youth, Northeast (1953). BS 1950, Kansas St. U.; MS 1962, Colorado St. U.

BOSCO, PAT J., Assoc. VP for Institutional Advancement/Dean of Student Life (1971). BS 1971, MS 1973, Kansas St. U.; PhD 1982, U. of Nebraska.

BOSTWICH, DIANE J., Co. Ext. Agent, Family and Consumer Sciences, Rush Co., LaCrosse (1988). BS 1987, Ft. Hays St. U.

BOWDEN, ROBERT L., Assoc. Prof. of Plant Pathology; Ext. Specialist, Plant Pathology, (1989). BS 1978, Michigan St. U.; MS 1981, U. of Minnesota; PhD 1989, U. of Wisconsin–Madison. (*)

BOWER, MERRY D., Asst. Prof., Cataloger, KSU Libraries (1980). BA 1976, U. of Kansas; MLS 1980, U. of Illinois.

BOWERS, JANE RAYMOND, Prof. of Foods and Nutrition; Agr. Exp. Sta. (1966). BS 1962, MS 1963, PhD 1967, Kansas St. U. (*)

BOWMAN, BRENT A., Adjunct Prof. of Arch. (1996). BArch 1972, Kansas St. U.

BOYER, CHRISTOPHER R., Asst. Prof. of History (1997). BA 1986, Dartmouth Col.; MA 1991, U. of Pittsburgh; PhD 1997, U. of Chicago.

BOYER, JAMES BUCHANAN, Prof. Emeritus, Education (1971). BS 1956, Bethune-Cookman Col., Florida; MEd 1964, Florida A&M U.; PhD 1969, Ohio St. U. (*)

BOYER, JOHN E., JR., Assoc. Prof. of Statistics; Statistical Consultant, Agr. Exp. Sta. (1981). BS 1969, U. of Nebraska; MS 1972, PhD 1976, Michigan St. U. (*)

BOYER, LORA J., Asst. Dir. of McNair Programs (1989). BA 1969, Culver-Stockton Col.; MS 1974, Michigan St. U.

BOYLE, BENJAMIN A., Dir. TV/Radio Communications (1989). BS 1989, U. of Nebraska–Lincoln.

BOYLE, ELIZABETH ERNST, Assoc. Prof. of Animal Sciences and Industry; Ext. Specialist, Meats (1992). BS 1980, U. of Minnesota; MS 1987, PhD 1991, Colorado St. U. (*)

BOZWORTH, ROBERT W., Co. Ext. Agent Agr. Emeritus, Franklin Co., Ottawa (1960). BS 1957, MS 1971, Kansas St. U.

BRADLEY, FRED O., Prof., Education (1972). BA 1962, Colorado St. Col.; MEd 1970, PhD 1972, U. of Wyoming. (*)

BRADSHAW, MICHAEL H., Assoc. Prof. of Family Studies and Human Services; Ext. Specialist, Health and Safety (1978). BS 1968, MS 1971, Brigham Young U.; PhD 1978, Kansas St. U.

BRANDEN, ELSIE P., Co. Ext. Home Economist Emerita, Finney Co., Garden City (1955). BS 1955, Kansas St. U.

BRANDNER, LOWELL, Prof. Emeritus (1947). AB 1937, BS 1937, Emporia St. U.; MS 1951, Kansas St. U.; PhD 1960, U. of Wisconsin. (*)

BRANDSBERG, GEORGE T., Prof.; Electronic Publishing, Communications (1977). BS 1959, U. of S. Dakota; MS 1967, Iowa St. U.

BRANDT, GARY W., Asst. Prof. of Equine Medicine (1969). BS 1964, DVM 1966, MS 1971, U. of Illinois; Diplomate 1984, American Col. of Theriogenology. (*)

BRANDT, PATRICIA D., Academic Counselor, Athletics (1988). BS 1978, U. of Missouri–Columbia, MEd 1984, U. of Nebraska.

BRANDT, ROBERT T., JR., Adjunct Assoc. Prof., Animal Sciences and Industry; Ruminant Nutrition and Beef Cattle Management (1988). BS 1978, MS 1981, U. of Missouri; PhD 1984, U. of Nebraska. (*)

BRATSBERG, BERNT, Assoc. Prof. of Economics (1991). Cand. Mag. 1984, U.of Bergen, Norway; MA 1987, PhD 1991, U. of California–Santa Barbara. (*)

BRATTON, TRY L., Asst. Forester, District Forester, Southwest (1997). BS 1988, U. of Missouri.

BRAZLE, FRANK K., Prof. of Animal Sciences and Industry; Ext. Specialist, Livestock Production, Southeast (1976). BS 1970, MS 1976, Kansas St. U.; PhD 1984, U. of Tennessee. (*)

BREDE, RICHARD M., Asst. Prof. of Sociology (1971). BA 1962, MS 1964, U. of Oregon; PhD 1971, U. of Illinois. (*)

BREEDEN, LOWELL D., Assoc. Prof. Emeritus of Vet. Medicine; Ext. Specialist, Vet. Medicine (1971). BS, DVM, 1953, Kansas St. U.

BREEN, LOUISE A., Asst. Prof. of History (1993). BA 1983, MA 1986, PhD 1993, U. of Connecticut. (*)

BRENT, BENNY E., Prof. of Animal Sciences and Industry; Animal Research Nutritionist, Agr. Exp. Sta. (1966). BS 1959, MS 1960, Kansas St. U.; PhD 1966, Michigan St. U. (*)

BRENT, JOHN, Asst. Prof. of Grain Science and Industry (1995). BS 1988, MS 1990, U. of Missouri; PhD 1995, Cornell U. (*)

BRESSERS, BONNIE, Asst. Prof. of Journalism and Mass Communications (1997). BA 1974, U. of Wisconsin–Madison.

BRETHOUR, JOHN R., Prof.; Beef Research Scientist, Agricultural Research Center–Hays (1957). BS 1955, Kansas St. U.; MS 1956, Oklahoma St. U. (*)

BRETZ, CONNIS M., District Ext. Agent, Family and Consumer Sciences, Walnut Creek Dist. 2, Dighton (1973). BS 1973, Fort Hays St. U.

BRIDGES, RONALD, Asst. Radiation Officer (1990). BS 1969, PhD 1990, Kansas St. U.

BRIGGS, DEBORAH J., Prof. of Vet. Diagnosis (1989). BS 1979, Pittsburg St. U.; MS 1983, U. of Arkansas; PhD 1989, Kansas St. U. (*)

BRIGGS, JOHN, Asst. Scientist of Biology. BS 1978, MS 1980, Pittsburg St. U.; PhD 1985, U. of Arkansas. (*)

BRIGHAM, LINDA C., Assoc. Prof. of English (1991). BA 1977, Georgetown U.; MA 1987, U. of Maryland; PhD 1991, U. of Maryland. (*)

BRIGHTMAN, ALAN H., Prof. of Ophthalmology (1987). DVM 1974, Kansas St. U.; MS 1977, U. of Illinois; Diplomate 1978, American Col. of Vet. Ophthalmologists. (*)

BRITTON, DANA, Asst. Prof. of Sociology (1995). BA 1987, MA 1989, U. of Oklahoma; PhD 1994, U. of Texas, Austin. (*)

BROCE, ALBERTO B., Prof. of Entomology; Research Entomologist, Vet. Entomology, Agr. Exp. Sta. (1979). BS 1965, MS 1967, PhD 1971, U. of Florida. (*)

BROCKMAN, HELEN L., Prof. Emerita of Clothing, Textiles, and Interior Design (1967). BA 1926, U. of Iowa. (*)

BROCKWAY, KATHY J., Instr. of Accounting (1994). BS 1990, MAcc 1991, Kansas St. U.; CPA 1991, Kansas.

BRONDELL, WILLIAM JOHN, Assoc. Prof. Emeritus of English (1964). AB 1959, MA 1964, PhD 1964, U. of Missouri. (*)

BROOKHART, CHARLES EDWARD, Prof. Emeritus of Education and Music (1975). BM 1949, MM 1950, PhD 1960, Geo. Peabody Col. (*)

BROOKS, BARBARA L., Unit Dir., Housing and Dining Services (1987). BS 1982, MS 1992, Kansas St. U.

BROOKS, H. LEROY, Prof. of Entomology; Ext. Specialist, Insecticides (1965). BS 1960, MS 1963, U. of Arkansas; PhD 1967, Kansas St. U. (*)

BROOKS, KENNETH R., Prof. of Landscape Arch. and Regional and Community Planning (1982). BS 1974, Colorado St. U.; MLA 1977, Utah St. U.; Registered Landscape Architect. (*)

BROWDER, LEWIS E., Adjunct Assoc. Prof. Emeritus of Plant Pathology; Research Cereal Rust Plant Pathologist, USDA SEA-AR (1958). AS 1952, Cameron St. Agric. Col.; BS 1954, MS 1956, Oklahoma St. U.; PhD 1965, Kansas St. U. (*)

BROWN, AMY J., Co. Ext. Agent, Family and Consumer Sciences, Wilson Co., Fredonia (1985). BS 1980, MS 1985, U. of Nebraska.

BROWN, ANNA MAE, Co. Ext. Agent, Family and Consumer Sciences; Crawford Co., Girard (1990). BS 1973, Kansas St. U.; MS 1976, Pittsburg St. U.

BROWN, CRAIG E., Inst. of Speech (1986). BA 1982, MA 1985, Kansas St. U.

BROWN, CHRISTOPHER, Asst. Prof. of Biology (1994). BS 1981, U. of N.C.; MS 1984, PhD. 1987, N.C. St. U. (*)

BROWN, DAVID A., Assoc. Prof. of Interior Arch. (1988). BIA 1984, Kansas St. U. MPD 1988, North Carolina St. U.

BROWN, GLEN R., Asst. Prof. of Art (1998). BA 1983, The Colorado Col.; MA 1986, SUNY at Stony Brook; MA 1991, PhD 1991, Stanford U. (*)

BROWN, KENT, Sports Information Dir. (1996). BS 1989, MA 1989, U. of Illinois.

BROWN, SUSAN, Assoc. Prof. of Biology (1983). BA 1978, Smith Col.; PhD 1984, U. of Missouri, Columbia. (*)

BROWN, TIM, Assoc., Systems Engineer, Communications (1995). BS 1984, Kansas St. U.

BROWN-GUEDIRA, GINA, Adj. Asst. Prof. of Agronomy; Wheat Genetics (1997). BS 1988, U. of Kentucky; MS 1991, U. of California Davis; PhD 1995, Kansas State U.

BRUCKERHOFF, DAVID N., Assoc. Prof. of Forestry; District Forester, Southeast (1978). BS 1971, MS 1975, U. of Missouri.

BRUMBELOE, JOSEPH, Asst. Prof. of Music (1993). BM 1978, Fort Wayne U.; MM 1981, PhD 1991, Indiana U. (*)

BRUMMETT, LYNNETTE, Asst. Dir., Admissions (1991). BS 1989, Peru St. Co.; MS 1991, Kansas St. U.

BRUNKOW, GLENN E., Co. Ext. Agent, Ag.; Pottawatomie Co., Westmoreland and Wabunsee Co., Alma (1993). BS 1993, Kansas St. U.

BRUTON, DAVID L., Asst. Forester; District Forester, Northeast (1992). BS 1988, U. of Missouri–Columbia.

BUCHHEISTER, JAMES, Asst. Controller, KSU Foundation (1984). BS, MBA 1984, Kansas St. U.

BUCHHOLZ, DARYL D., Prof. of Agronomy; Asst. Dir., Ext. Ag., Natural Resources and Community Dev. (1992). BS 1975, So. Dakota St. U; MS 1977, Oklahoma St. U.; PhD 1980, Kansas St. U. (*)

BUCHWALD, DONALD L., Prof. of Mechanical Engineering Tech. (1966). AA 1962, Cameron St. U.; BS 1964, Oklahoma St. U.; MS 1971, Kansas St. U.

BULK, HERBERT W., Co. Ext. Dir., Emeritus, Shawnee Co., Topeka (1949). BS 1949, Kansas St. U.

BULLER, ORLAN H., Prof. Emeritus of Agricultural Economics; Research Agr. Econ. Farm Management; Production Economics, Agr. Exp. Sta. (1963). BS 1958, Kansas St. U.; MS 1959, PhD 1965, Michigan St. U. (*)

BULLOCK, ROBERT A., Assoc. Prof. of Interior Arch. (1982). BFA 1970, MFA 1975, Michigan St. U.

BURCHETT, LOWELL A., Asst. Prof. of Agronomy; Crop Scientist, Kansas Crop Improvement Association, Agr. Exp. Sta. (1965). BS 1956, Oklahoma St. U.; MS 1969, Kansas St. U.

BURCKEL, ROBERT B., Prof. of Mathematics (1971). BS 1961, U. of Notre Dame; MA 1963, PhD 1968, Yale U. (*)

BURDEN, PAUL R., Asst. Dean and Prof. of Education (1980). BS 1970, MS 1973, Buffalo St. Col.; PhD 1979, Ohio St. U. (*)

BURGE, NORMAN D., Television Specialist, Athletics (1989). BS 1977, Kansas St. U.

BURGESS, ROBERT G., Asst. Dir. of Housing and Dining Services (1989). BS 1983, Northern Michigan U.; MBA 1986, Northwest Missouri St. U.

BURKE, CINDY, Health Educator, Lafene Health Cntr. (1981). BSN 1978, U. of Virginia; MS 1981, Kansas St. U.

BURKE, JACK M., Prof. Emeritus of Communications (1958). BA 1953, ME 1958, N. Dakota St. U.

BURKHARD, KENNETH, Prof. Emeritus of Biochemistry (1950); AB 1947, Arizona St. Col.; PhD 1950, Northwestern U. (*)

BURNETT, DIANE L., Co. Ext. Agent, Family and Consumer Sciences; Miami Co., Paola (1990). BS 1973, Emporia St. U.

BURROUGHS, ALBERT L., Assoc. Prof. Emeritus of Virology; Research Virologist (1960). BS 1938, U. of Wyoming; DVM 1958, Texas A&M; MS 1941, Montana St. Col.; PhD 1946, U. of California. (*)

BURTIS, JOHN O., Assoc. Prof. of Speech (1991). BA 1977, Kansas St. U.; MA 1979, Kansas St. U.; PhD 1987, U. of Minnesota. (*)

BURTON, CHARLES L., Prof. of Architectural Engineering, Construction Science (1970). BS 1963, Kansas St. U.; MS 1975, U. of Kansas; Professional Engineer, Kansas, 1970. (*)

BURTON, ROBERT O., Assoc. Prof. of Agricultural Economics, Farm Management, Production Economics, Farm Finance (1984). BS 1969, MS 1977, Virginia Poly. Inst.; PhD 1982, Purdue U. (*)

BUSCH, RICHARD M., Asst. Prof. of Geology (1984). BA 1978, Franklin and Marshall Col.; MA 1981, Temple U.; PhD 1984, U. of Pittsburgh. (*)

BUSCHMAN, LAWRENT L., Assoc. Prof. of Entomology; Research Entomologist, Corn Insects, SW Research–Ext. Cntr. (1981). BA 1964, Tabor Col.; MS 1968, Emporia St. U.; PhD 1977, U. of Florida. (*)

BUSSET, GLENN M., Prof. Emeritus; Asst. Dir., 4–H Youth Programs (1941). BS 1941, Kansas St. U.; MS 1957, Cornell U.; PhD 1965, U. of Wisconsin. (*)

BUSSING, CHARLES E., Assoc. Prof. Emeritus of Geography (1964). BA 1959, Colorado St. Col.; MA 1961, U. of Colorado; PhD 1968, U. of Nebraska. (*)

BUSSING, SANDRA I., Instr. Emeritus of English (1974). BA 1957, U. of Colorado.

BUSSMAN, DERINDA G., Co. Ext. Agent, Family and Consumer Sciences, Barton Co., Great Bend (1971). BS 1971, Panhandle St. Col.

BUSZEK, KEITH R., Assoc. Prof. of Chemistry (1990). BS 1980, U. of California–Irvine; PhD 1987, U. of California–Los Angeles. (*)

BUTLER, HUGH C., Prof. Emeritus of Surgery (1968). BS 1950, DVM 1954, Washington St. U.; Diplomate 1965, American Col. of Vet. Surgeons; MS 1968, Washington St. U. (*)

BUYLE, KENNETH R., Business Manager, Biology (1979). BS 1972, Monmouth Col., NJ; MS 1985, Kansas St. U.

BUZENBERG, MILDRED E., Asst. Prof. Emerita of Management (1964). BA 1938, Michigan St. U.; MS 1951, Kansas St. U.

BYARS, JACKSON A., Asst. Prof., Education (1969). BA 1959, Municipal U. of Omaha; MA 1964, Colorado St. Col.; PhD 1970, U. of Nebraska. (*)

BYRNE, DAVID R., Dir., Educational Advancement; Prof., Education (1984). BA 1959, Idaho St. U.; PhD 1971, U. of Utah. (*)

CABLE, TED T., Prof. of Forestry (1984). BS 1974, U. of Illinois–Chicago; MS 1980, PhD 1984, Purdue U. (*)

CAFFEY, ROB, Assoc. Dir. of Information Systems, Continuing Education (1997). BS 1977, Kansas St. U.

CAINE, HOMER DODGE., Asst. Prof. Emeritus of Music (1966). BM 1940, Drake U.; MS 1957, Kansas St. U. (*)

CALEY, HOMER K., Prof. Emeritus of Vet. Medicine; St. Leader, Vet. Medicine (1965). DVM 1952, Kansas St. U.

CALHOUN, MYRON AMMON, Assoc. Prof. Emeritus of Computing and Information Sciences (1971). AA 1961, Graceland Col.; BS 1963, U. of Kansas; MS 1964, Colorado St. U.; PhD 1967, Arizona St. U. (*)

CALL, CHARLES L., Co. Ext. Agent, Brown Co., Hiawatha (1989). BS 1974, MS 1993, Kansas St. U.

CALL, EDWARD P., Prof. Emeritus of Animal Sciences and Industry; Ext. Specialist, Dairy Science (1980). BS 1951, Ohio St. U.; PhD 1967, Kansas St. U.

CALLUORI HOLCOMBE, ANNA, Prof. and Head of Art (1994). BA 1970, Montclair St. U.; MFA 1974, Louisiana St. U. (*)

CAMPBELL, DAVID, Asst. Basketball Coach (1994). BA 1980, St. Marys College, California.

CAMPBELL, JOSEPH K., Instr. of Computing and Information Sciences (1983). MS 1976, Kansas St. U.

CAMPBELL, ROBERT E., Research Asst. of Animal Sciences and Industry (1989). BS 1978, U. of Connecticut; MS 1980, Ohio St. U.

CAMPBELL, STACY T., Co. Ext. Agent, Morton Co., Elkhart (1995). BS 1986, Angelo St. U.

CANNON, BARBARA, Instr. of Clothing, Textiles, and Interior Design (1981). BS 1971, MS 1981, Kansas St. U.

CANTER, DEBORAH D., Prof., Hotel, Restaurant, Institution Management and Dietetics (1977). BS 1972, MS 1974, PhD 1977, U. of Tennessee. (*)

CANTRELL, JOYCE A., Instr. of Family Studies and Human Services (1986). BS 1983, MS 1986, Kansas St. U.

CAREY, JAMES CHARLES, Prof. Emeritus of History (1948). BA 1937, Nebraska St. Teachers Col. (Wayne); MA 1940, PhD 1948, U. of Colorado. (*)

CARLSON, JEAN K., Prof. Emerita; Ext. Specialist, Household Equipment and Management (1950). BS 1950, Kansas St. U.; MS 1965, Oklahoma St. U.

CARLSON, LOIS O., Co. Ext. Agent, Family and Consumer Sciences, Neosho Co., Erie (1964). BS 1964, Pittsburg St. U.; MS 1982, Kansas St. U.

CARLSON, VIRGIL P., Co. Ext. Agricultural Agent Emeritus, Ellsworth Co., Ellsworth (1957). BS 1949, MS 1966, Kansas St. U.

CARLSON, GLENNIS, Dir. of Administrative Services, KSU Foundation (1969).

CARNAHAN, DAVID L., Assoc. Prof. Emeritus of Obstetrics and Gynecology (1961). BS 1959, DVM 1959, MS 1964, Kansas St. U.; Diplomate 1976, American Col. of Theriogenology.

CARNES, KEVIN, Assoc. Research Prof. of Physics (1984). PhD 1984, Purdue U. (*)

CARPENTER, FRANK R., Assoc. Prof. Emeritus, Education; Assoc. Dean and Assoc. Dir. of Resident Instruction, Agr. (1961). BS 1948, MS 1951, Kansas St. U.; PhD 1967, U. of Missouri. (*)

CARPENTER, JAMES W., Prof. of Exotic Animal Medicine (1989). DVM 1974, MS 1970, Oklahoma St. U. (*)

CARPENTER, KENNETH H., Prof. of Electrical and Computer Engineering (1986). BS 1961, MS 1962, Kansas St. U.; PhD 1966, Texas Christian U. (*)

CARR, LINDA L., Co. Ext. Agent, Family and Consumer Sciences, Montgomery Co., Independence (1963). BS 1962, MS 1978, Kansas St. U.

CARTER, GERALD, Dir./Univ. Architect of Facilities Planning (1992). BA 1976, Kansas St. U.

CARTER, PHILLIP D., Assoc. Prof., Education (1980). BS 1962, Central Missouri St. U.; MEd 1966, Ed. Spec. 1969, PhD 1976, U. of Missouri. (*)

CARTER, ANN L., Instr., English Language Program (1986). BA 1975, Kansas St. U.; MA 1980, U. of Kansas.

CASH, WALTER C., Prof. of Anatomy (1974). DVM 1971, PhD 1982, Kansas St. U. (*)

CASHIN, WILLIAM E., Dir. of Cntr. for Faculty Evaluation and Dev. (1975). BA 1958, MA 1961, PhD 1969, Catholic U. of America. (*)

CASSOU, STEVEN P., Assoc. Prof. of Economics (1997). BA 1992, U. of California at Berkeley; PhD 1989, U. of Minnesota. (*)

CATANIA, DANA GRANT, Enrollment Management and Residence Life Coord., Housing and Dining Services (1997). BA 1995, Alma Col.; MS 1997, Kansas St. U.

CAUBLE, A. ELIZABETH, Asst. Prof. of Social Work (1993). BA 1972, U. of Colorado–Boulder; MA 1980, PhD 1988, U. of Minnesota.

CAUL, JEAN FRANCES, Prof. Emerita of Foods and Nutrition (1967). AB 1937, Lake Erie Col.; MA 1938, PhD 1942, Ohio St. U. (*)

CAVELLO, ROBERT J., Athletic Business Manager (1996). BS 1987, U.S. Air Force Academy.

CENTER, MELVIN S., Prof. of Biology (1970). BS 1962, U. of Georgia; MS 1964, PhD 1967, Medical Col. of Georgia. (*)

CENTERS, DAVID A., Asst. Prof. of Theatre (1993). BFA 1986, U. of Cincinnati; MFA 1990, New York U. (*)

CHADD, DAVID, Asst. Baseball Coach (1991). BA 1989, Wichita St. U.

CHAKRABARTI, AMITABHA, Assoc. Prof. of Physics (1990). BS 1979, MS 1982, U. of Calcutta, India; PhD 1987, U. of Minnesota. (*)

CHAMBERS, DELORES, Instr. of Foods and Nutrition (1995). BS 1982, Southeast Missouri St. U.; MS 1992, PhD 1994, Kansas St. U.

CHAMBERS, EDGAR, IV, Prof. of Foods and Nutrition; Dir. of Sensory Analysis Center (1988). BS 1977, U. of Tennessee; MS 1979, PhD 1980, Kansas St. U. (*)

CHANDLER, LAURIE R., Co. Ext. Dir., Shawnee Co., Topeka (1993). BS 1982, MS 1984, Kansas St. U.

CHANDRA, D.V. SATISH, Assoc. Prof. of Electrical and Computer Engineering (1984). BE 1970, Bangalore U., India; ME, Indian Inst. of Sci., India; MS 1980, PhD 1984, Auburn U. (*)

CHANG, AMOS I. T., Prof. Emeritus of Arch. (1966). BS Civil Engg. 1939, National Chung King U.; MFA 1949, PhD 19[illegible] [illegible] U.; Registered Architect. (*)

CHANG, CHENG S., Adjunct Assoc. Prof. of Biological and Agricultural Engineering (1979). BS 1960, National Taiwan U.; MS 1966, Mississippi St. U.; PhD 1970, North Carolina St. U. (*)

CHANG, SHING I., Assoc. Prof. of Industrial and Manufacturing Systems Engineering (1991). BS 1983, Tsing Hua U.; MS 1987, Arizona St. U.; PhD 1991, Ohio St. U. (*)

CHANG, YANG-MING, Assoc. Prof. of Economics (1984). MA 1978, Nat. Taiwan U., Taipei; PhD 1984, SUNY, Buffalo. (*)

CHAPES, STEPHEN K., Assoc. Prof. of Biology; Immunologist, Agr. Exp. Sta. (1984). BS 1975, MS 1978, PhD 1981, U. of Illinois. (*)

CHAPIN, ERNEST KNIGHT, Assoc. Prof. Emeritus of Physics (1923). AB 1918, MS 1923, U. of Michigan. (*)

CHAPMAN, KIRBY S., Assoc. Prof. of Mechanical and Nuclear Engineering (1990). BS 1980, Purdue U.; MS 1987, Michigan Technological U.; PhD 1990, Purdue U. (*)

CHARLAND, KIMBERLY D., Instr. of Accounting (1996). BS 1983, MAcc 1985, Kansas St. U.; CPA 1985, Kansas, 1988, Missouri.

CHARLTON, RALPH E., Asst. Prof. of Entomology; Insect Chemical Communication (1992). BS 1978, MS 1981, Michigan St.; PhD 1988, Univ. of Massachusetts. (*)

CHARNEY, WAYNE M., Assoc. Prof. of Arch. (1987). BS 1973, MArch 1975, U. of Illinois; PhD 1985, Northwestern U. (*)

CHASTAIN, MELVIN L., Dir. of Kansas Regents Educational Communications Cntr.; Assoc. Prof. of Journalism and Mass Communications (1987). BA 1961, MA 1962, U. of Denver; PhD 1970, Texas A&M.

CHAUDHURI, SAMBHUDAS, Prof. of Geology (1966). BS 1956, Calcutta U., India; MS 1958, Jadavpur U., India; MS 1961, Indiana U.; PhD 1966, Ohio St. U. (*)

CHELIKOWSKY, JOSEPH RUDOLPH, Prof. Emeritus of Geology (1937). BA 1931, MA 1932, PhD 1935, Cornell U. (*)

CHELZ, ANTHONY W., Assoc. Prof. of Landscape Arch. and Regional and Community Planning (1975). BArtEd 1966, Sch. Art Inst., Chicago; MFA 1970, Syracuse U.

CHEN, SHIH-FEN, Asst. Prof. of Marketing and International Business (1997). BBA 1979, National Cheng-Jung U; MBA 1985, Michigan St. U.; PhD. 1996, U. of Illinois at Urbana–Champaign.

CHENGAPPA, M. M., Prof. and Acting Head of Pathology and Microbiology (1988). BVSc 1970, MS 1973, U. of Agricultural Science, India; PhD 1981, Michigan St. U.; Diplomate 1981, American Col. of Vet. Microbiology. (*)

CHENOWETH, PETER, Prof., Clinical Sci. Choleman Chair (1997). BVSc 1968, PhD 1979, U. of Queenland, Australia.

CHERMAK, ANDREW, Assoc. Prof. of Mathematics (1982). AB 1971, PhD 1975, Rutgers U. (*)

CHERRY, CYNTHIA S., Co. Ext. Agent, Family and Consumer Sciences, Wyandotte Co., Kansas City (1985). BS 1981, MS 1985, Kansas St. U.

CHESTNUT, BILL, Computer and Communication Specialist, Col. of Tech. (1994). AA 1992, BS 1993, Kansas St. U.

CHLADNY, BRUCE A., Co. Ext. Agent, Hort., Wyandotte Co., Kansas City, KS (1996). BS 1991, Purdue U.; MS 1993, U. of Missouri.

CHOWDHURY, SHAFIQUL I., Assoc. Prof. of Microbiology (1990). DVM 1978, MSc 1980, Bangladesh Agricultural U.; PhD 1987, Free University of Berlin. (*)

CHRISTENSEN, KEITH H., Assoc. Prof. Emeritus of Arch. (1966). BArch 1950, U. of Nebraska; MArch 1957, U. of Michigan; Registered Architect. (*)

CHRISTIAN, MICHAEL L., Co. Ext. Agent, Riley Co., Manhattan (1979). BS 1973, Oklahoma St. U.; MS 1990, Kansas St. U.

CHRISTMAS, RODNEY A., Asst. Prof. of Clinical Sciences (1995). DVM 1993, Mississippi State U.

CHUN, RUTHANNE, Assoc. Prof., Clinical Sci. (1997). BS 1987, DVM 1991, U. of Wisconsin–Madison.

CHUNG, DO SUP, Prof. of Biological and Agricultural Engineering (1965). BS 1958, Purdue U.; MS 1960, PhD 1966, Kansas St. U. (*)

CHUNG, OKKYUNG, Adjunct Prof. of Grain Science and Industry; USDA Grain Marketing Research Cntr. (1976). BS 1959, EWHA Women's U., Korea; MS 1965, PhD 1973, Kansas St. U. (*)

CICCANTELL, LAURA R., Student Services Coord., Educational Supportive Services (1994). BA 1988, Trinity U.; MS 1990, U. of Wisconsin.

CICCANTELL, PAUL S., Asst. Prof. of Sociology (1994). BA 1987, Trinity U., MS 1991; PhD 1994, U. of Wisconsin–Madison. (*)

CICHOCKI, ANGELA, Co. Ext. Agent, Family and Consumer Sciences, Lyon Co., Emporia (1996). BS 1994, Kansas St. U.

CLAASSEN, MARK M., Assoc. Prof. of Agronomy; Research Agronomist in charge, Harvey Co. Experimental Field (P.O. Hesston) Agr. Exp. Sta. (1977). BS 1965, U. of Nebraska; MS 1968, PhD 1971, Iowa St. U.

CLAFLIN, LARRY E., Prof. of Plant Pathology; Research Phytobacteriologist, Agr. Exp. Sta. (1975). BS 1963, NW Oklahoma St. U.; MS 1969, East Texas St. U.; PhD 1972, Kansas St. U. (*)

CLARK, GARY A., Prof. of Biological and Agricultural Engineering (1994). BSE 1980, MS 1982, U. of Florida; PhD 1986, Texas A&M U. (*)

CLARK, GEORGE R., II, Prof. of Geology (1977). AB 1961, Cornell U.; MS 1966, PhD 1969, Caltech. (*)

CLARK, MARCELLA P., Instr. Emerita of English (1985). BA 1982, Union Col.; MA 1985, Kansas St. U.

CLARK, MICHAEL R., Baseball Coach (1986). BS 1975, Missouri Western St. Col.; MS 1977, Northwest Missouri St. U.

CLARK, ROBERT L. A., Assoc. Prof. of Modern Languages (1992). BA 1973, Carlton Col.; MA 1976, Indiana U. (*)

CLARK, PHILIP M. III, Asst. Prof. of Philosophy (1997). BA 1980, Oberlin Col.; PhD 1992, UCLA.

CLARK, STANLEY JOE, Prof. Emeritus of Biological and Agricultural Engineering; Ag. Exp. Sta. (1966). BS 1954, MS 1959, Kansas St. U.; PhD 1966, Purdue U.; Professional Engineer. 1969. (*)

CLARK, TODD, Residence Life Coord., Housing and Dining Services (1997). BA 1995, Virginia Tech; MS 1997, Western Illinois U.

CLARKE, MARY P., Prof. of Foods and Nutrition; Ext. Specialist, Nutrition Education (1973). BS 1950, Indiana U.; MS 1970, Indiana St. U.; PhD 1973, Kansas St. U.

CLARKSON–FRISBIE, JEAN K., Co. Ext. Agent, Family and Consumer Sciences and 4–H. Pratt Co., Pratt (1970). BS 1970, MS 1988, Kansas St. U.

CLAWSON, ELDON L., Co. Ext. 4–H Agent Emeritus, Shawnee Co., Topeka (1965). BS 1965, Kansas St. U.

CLAYBERG, CARL D., Prof. Emeritus of Hort.; Research Horticulturist, Vegetable Crop Geneticist, Agr. Exp. Sta. (1974). BS 1954, U. of Washington; PhD 1958, U. of California. (*)

CLEGG, ROBERT E., Prof. Emeritus of Biochemistry (1948). BS 1936, Rhode Island St. Col.; MS 1939, North Carolina St. Col.; PhD 1948, Iowa St. U. (*)

CLEGG, VICTORIA L., Dir., Educational Advancement; Asst. Prof., Education (1982). BS 1965, Kansas St. U.; MA 1972, Wichita St. U.; PhD 1979, Kansas St. U.

CLELAND, MARJORIE V., Inst. Emerita, Dean's Office (1970). BA 1968, MS 1970, Kansas St. U.

CLEMENT, LAURENCE A., JR., Assoc. Prof. of Landscape Arch. and Regional and Community Planning (1981). BS 1978, BLA 1980, SUNY, Col. of Environmental Science and Forestry; MLA 1985, Kansas St. U.; JD 1991, U. of Kansas. Registered Landscape Architect; Licensed Attorney. (*)

CLIMENHAGA, JOEL R., Assoc. Prof. Emeritus of Theatre (1968). AA 1949, Chaffey Col.; BA 1953, MA 1958, U. of California at Los Angeles. (*)

CLINE, LUCILLE G., Co. Ext. Home Economist Emerita, Pawnee Co., Larned (1951). BS 1948, Kansas St. U.

CLONTS, HALLIE L., Prof. Emerita; Ext. Specialist, Programs (1973). BS 1943, U. of Missouri; EdM 1964, Boston U.; EdD 1972, Arizona St. U.

CLORE, ROBERT ALVIN, Assoc. Prof. of Art (1970). AA 1966, Casper Col.; BA 1968, MA 1970, U. of Northern Colorado; MFA 1977, U. of Kansas.

COATES, GARY J., Prof. of Arch. (1977). BED 1969, MArch 1971, North Carolina St. U. (*)

COCHRAN, ALFRED W., Prof. of Music (1979). BME 1972, Memphis St. U.; MM 1975, PhD 1986, Catholic U. (*)

COCHRAN, MARY LEE, Asst. Prof. of Music (1984). BME 1977, MM 1979, DMA 1984, Catholic U. (*)

COCHRAN, ROBERT C., Prof. of Animal Sciences and Industry; Beef Cattle Range Management (1985). BS 1980, MS 1980, Ohio St. U.; PhD 1985, New Mexico St. U. (*)

COCHRANE, TODD E., Prof. of Mathematics (1984). BS 1978, Harvey Mudd Col.; PhD 1984, U. of Michigan. (*)

COCKE, CHARLES L., Prof. of Physics (1969). AB 1962, Haverford Col.; PhD 1967, California Inst. of Tech. (*)

COCKE, ENID O., Dir., English Language Program (1986). BA 1967, Scripps Col., California; MA 1982, Kansas St. U.

CODRINGTON, DAVID, Asst. Spec., Library Network Services, KSU Libraries (1997). BS 1993, MS 1994, U. of Leeds.

COFFMAN, CRYSTAL R., Co. Ext. Agent, 4–H, Miami Co., Paola (1972). BS 1971, MS 1996, Kansas St. U.

COFFMAN, JAMES R., Provost; Prof. of Clinical Sciences (1981). BS 1960, DVM 1962, MS 1969, Kansas St. U. (*)

COHEN, PETER Z., Assoc. Prof. Emeritus of English (1961). BS 1953, MA 1961, U. of Wyoming.

COKINOS, CHRISTOPHER, Instr. of English (1995). BA 1986, Indiana U; MFA 1991, Washington U.

COLE, GEORGE, Adjunct Asst. Prof. Emeritus of Agronomy; Research Agricultural Engineer, Wind Erosion Research Unit, USDA ARS (1981). BS 1953, Polytech Rensselaer; PhD 1973, Cornell U.

COLE, KAREN S., Assoc. Prof., Assoc. Dean of KSU Libraries (1992). EdD 1992, Kansas St. U.; MLS 1977, Emporia St. U.; AB 1972, Ft. Hays St. U.

COLE, MICHAEL R., Co. Ext. Agent, Geary Co., Junction City (1995). BS 1995, Kansas St. U.

COLE, RANDALL, Head Men's and Women's Cross Country Coach (1997). BS 1980, U. of California Poly St.–San Louis Obispo.

COLE, ROD, Strength and Conditioning Coach (1993). 1984. Bethany College; MEd 1988, Wichita St. U.

COLE, TRACI, Admissions Representative, Col. of Tech. and Aviation (1997). BS 1993, Kansas St. U.

COLEMAN, RAYMOND J., Prof. Emeritus of Marketing (1965). BS 1948, U. of Kansas; MA 1963, Central Missouri St. U.; PhD 1967, U. of Arkansas. (*)

COLEMAN, RICHARD P., Prof. Emeritus of Marketing and International Business (1981). BS 1948, U. of Tulsa; MA 1949, U. of Iowa; PhD 1959, U. of Chicago. (*)

COLLINS, BILL D., Farm Management Association Fieldman Emeritus (1954). BS 1951, Kansas St. U.; MS 1962, U. of Wisconsin.

COLLINSON, MARYANNE M., Asst. Prof. of Chemistry (1994). BS 1987, U. of Central Florida; PhD 1993, North Carolina St. U. (*)

COLON, KEVIN D., Academic Counselor, Intercollegiate Athletics (1993). BS 1988, Iowa St. U.

CONDIA, ROBERT J., Assoc. Prof. of Arch. (1989). BArch 1980, Cal. Poly–San Luis Obispo; MArch 1983, Columbia U.; Registered Architect. (*)

CONDRAY, MARY M., Co. Ext. Agent; Ottawa Co., Minneapolis (1991). BS 1968, Sterling Co.

CONNAUGHTON, JACK, Assoc. Dir., K-State Student Union (1980). BS 1968, MS 1971, U. of Wisconsin–LaCrosse.

CONNELLY, KATHY, Asst. Dir., Information Systems, Col. of Tech. (1979).

CONRAD, ABIGAIL, Assoc. Prof. of Biology (1971). BA 1963, Wheaton Col.; MS 1965, PhD 1969, Yale U. (*)

CONRAD, ARLETTE, Asst. Instr., KSU Libraries (1994). BA 1993, Kansas St. U.

CONRAD, GARY W., Univ. Dist. Prof. of Biology (1970). BS 1963, Union Col.; MS 1965, PhD 1968, Yale U. (*)

CONROW, KENNETH, Assoc. Prof. Emeritus of Computing and Information Sciences; Assoc. Dir. of Computing and Telecommunications Activities (1961). BA 1954, Swarthmore Col.; PhD 1957, U. of Illinois. (*)

CONROW, MARGARET E., Assoc. Prof. of English (1964). BA 1954, Swarthmore Col.; MA 1955, PhD 1962, U. of Illinois. (*)

CONSIGLI, RICHARD ALBERT, Dist. Prof. of Biology; Virologist, Agr. Exp. Sta. (1963). BS 1954, Brooklyn Col.; MA 1956, PhD 1960, U. of Kansas. (*)

CONSOLVO, CAMILLE, Asst. Dean of the Graduate School (1997). BS 1976, MS 1978, Southwest Missouri St. U.; PhD 1988, Florida St. U. (*)

COOK, JAMES E., Prof. Emeritus of Pathology (1969). DVM 1951, Oklahoma St. U.; Diplomate 1956, American Col. of Vet. Pathologists; PhD 1970, Kansas St. U. (*)

COOL, VINCENT, Assoc. Dir. Emeritus of Facilities Arch. and Engg. Services (1950). BArch 1951, Kansas St. U.

COONEY, JOHN W. JR., Asst. Prof. of Finance (1996). BS 1979, U. of Florida; JD 1982, MBA 1982, PhD. 1992, U. of Utah.

COOPER, CORA, Assoc. Prof. of Music (1990). BM 1978, U. of Vermont; MM 1982, Eastman School of Music; DM 1992, Florida St. U. (*)

COOPER, JEAN, Adjunct Clinical Instr. of Medical Tech. (1984). BS 1969, Central Missouri St. U.; MPA 1979, U. of Missouri, K.C.

COOPER, PETER B., Prof. of Civil Engineering (1966). BS 1957, MS 1960, PhD 1965, Lehigh U.; Professional Engineer, 1969. (*)

COOPER, HELEN, Asst. Dir. of Facilities Planning (1992). BS 1978, MS 1986, Kansas St. U.

COPELAND, JAMES L., Prof. Emeritus of Chemistry (1962). BS 1952, U. of Illinois; PhD 1962, Indiana U. (*)

COPPIN, KERRY S., Asst Prof. of Art (1997). BFA 1975, Rochester Inst. of Tech.; MFA 1977, Rhode Island Sch. of Design (*)

CORAH, LARRY R., Prof. Emeritus of Animal Sciences and Industry; Ext. State Leader, Animal Sciences and Industry (1974). BS 1964, N. Dakota St. U.; MS 1967, Michigan St. U.; PhD 1974, U. of Wyoming. (*)

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CORUM, ROBERT T., Prof. of Modern Languages (1977). BA 1969, Old Dominion Col.; MA 1971, PhD 1975, U. of Virginia. (*)

COTT, KENNETH, Visiting Prof. (1992). BA 1964, Ft. Hays St. Col.; MA 1967, PhD 1978, U. of New Mexico.

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COUGHLIN, COLLEEN M., Research Asst., KABSU (1979). BS 1979, U. of Minnesota.

COULSON, STEPHEN J., Dir., Engineering Computer Cntr. (1985). BS 1965, Kansas St. U.

COWAN, LAINE A., Assoc. Prof. of Small Animal Medicine (1988). DVM 1984, U. of California; MS 1989, U. of Georgia; Diplomate 1988, American Col. of Vet. Internal Medicine.

COWAN, THADDEUS M., Prof. Emeritus of Psychology (1970). BA 1957, Centre Col. of Kentucky; MS 1959, PhD 1964, U. of Connecticut. (*)

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COX, KELLINE S., Asst. Dir., Planning and Analysis (1989). BS 1986, MS 1988, Kansas St. U.

COX, LAWRENCE J., Prof. Emeritus; Area Ext. Dir. (1952). BS 1948, Oklahoma St. U.; MS 1960, Kansas St. U.; EdD 1970, North Carolina St. U.

COX, WILLIAM E., Co. Ext. Dir. Emeritus, Sedgwick Co., Wichita (1958). BS 1955, Kansas St. U.

COYNE, PATRICK I., Prof. and Head, Western Kansas Agricultural Research Centers, Agronomist (1985). BS 1966, Kansas St. U.; PhD 1969, Utah St. U. (*)

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CRAIG, M. DOROTHY, Asst. Prof. Emerita of Education (1959). BS 1931, Bethany Col.; BS 1941, Emporia St. U.; MA 1944, Columbia U.

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CRANE, LOUIS, Assoc. Prof. of Mathematics (1992). PhD 1985, Univ. of Chicago. (*)

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CRAWFORD, DON, Information Services Mgr., Arch., Planning, and Design (1997).

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CREECH, TOM, Prof. Emeritus, Arts, Sciences, and Aviation, Col. of Tech. and Aviation (1976). BSME 1957, MS 1961, Kansas St. U.

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CULLERS, ROBERT L., Prof. of Geology (1971). BS 1959, MA in Chemistry 1962, Indiana U.; PhD 1971, U. of Wisconsin. (*)

CULLY, JACK, Adj. Asst. Prof. of Biology (1994). BS 1967, MS 1972, PhD 1984, U. of New Mexico. (*)

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CUNNINGHAM, FRANKLIN E., Prof. Emeritus of Animal Sciences and Industry; Poultry Foods Research Scientist, Agr. Exp. Sta. (1969). BS 1957, Kansas St. U.; MS 1959, PhD 1963, U. of Missouri. (*)

CURNUTTE, BASIL, JR., Prof. Emeritus of Physics (1954). BS 1945, U.S. Naval Academy; PhD 1953, Ohio St. U. (*)

CURRIE, RANDALL S., Assoc. Prof. of SW Research Ext. Cntr. (1991). BS 1980, Kansas St. U.; MS 1987, Oklahoma St. U.; PhD 1990, Texas A&M U. (*)

CURRY, ELIZABETH A., Instr.; Ext. Spec., Family and Consumer Sciences, Northwest (1993). BS 1974, Texas Tech.; MS 1993, Ft. Hays St. U.

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DAHL, ROBERT E., Prof. Emeritus of Architectural Engineering and Construction Science (1976). BS 1951, MS 1954, Kansas St. U.; Professional Engineer. (*)

DALE, BETTIE M., Arts and Sciences Advisor Emeritus, Assoc. Prof. Emeritus of Chemistry (1964). BS 1946, Baylor; MS 1951, PhD 1954, Ohio St. U.

DALE, E. BROCK, Prof. Emeritus of Physics (1957). BS 1940, MS 1944, U. of Oklahoma; PhD 1953, Ohio St. U. (*)

DALIDA, JOHN W., Assoc. Prof., Education (1988). AB 1970, MA 1971, U. of Detroit; PhD 1988, U. of Chicago.

DALY, ROBERT K., Assoc. Prof. of Journalism and Mass Communications (1973). AB 1967, Marquette U.; MA 1973, Sangamon St. U.

DAMKROGER, WILLIAM, Dir. of Telecommunications (1990). BS 1982, U. of Texas.

DANBY, JOHN HERBERT, Adjunct Asst. Prof. of Dietetics (1984). MD 1956, U. of Leeds, England.

DANDU, RAJU, Asst. Prof. of Mechanical Engineering Tech. (1996). BS 1981 Slovak Technical U.; Ph.D. 1991 North Dakota St. U.

DANIEL, DOUGLASS K., Asst. Prof. of Journalism and Mass Communications (1995). BS 1980, Kansas St. U.; MS 1991, PhD 1995, Ohio U. (*)

DANNELLS, MICHAEL, Prof., Education (1986). BS 1971, Bradley U.; PhD 1978, U. of Iowa. (*)

DANOS, JOHN P., Coord. for Academic Affairs, Housing and Dining Services (1994). BA 1991, Grinnell Col.; MS 1994, Oklahoma St. U.

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DAVENPORT, JOYCE M., Co. Ext. Agent, Family and Consumer Sciences, Bourbon Co., Fort Scott (1983). BS 1983, U. of Nebraska.

DAVIDSON, JEFFREY L., Co. Ext. Agent, Agr., Greenwood Co., Eureka (1977). BS 1973, MS 1975, Colorado St. U.

DAVIDSON, STEVEN, Asst. Prof. of Interior Arch. (1997). BIA 1977, Kansas St. U.

DAVIS, ALVIN N., Co. Ext. Agent, Youth Development, Johnson Co., Olathe (1995). BA 1988, Thiel Col.

DAVIS, DEAN L., Co. Ext. Agent, Agr., Shawnee Co., Topeka (1989). BS 1966, MS 1996, Kansas St. U.

DAVIS, DONNA J., Dir. of International Student Cntr. (1981). BS 1971, MS 1974, PhD 1982, Kansas St. U.

DAVIS, DUANE L., Prof. of Animal Sciences and Industry; Swine Research Physiologist, Agr. Exp. Sta. (1977). BS 1970, MS 1974, Kansas St. U.; PhD 1976, U. of Missouri. (*)

DAVIS, FREEMAN M., Dir. of Development for Multicultural Programs/Library, KSU Foundation (1994). BA 1977, Juilliard.

DAVIS, JAMES L., Asst. Prof. of Finance (1994). BS 1978, Oklahoma St. U.; MBA 1983, DePaul U.; PhD 1994, U. of Illinois. (*)

DAVIS, LAWRENCE CLARK, Prof. of Biochemistry; Biochemist, Agr. Exp. Sta. (1975). BS 1966, Haverford Col.; PhD 1970, Yeshiva U. (*)

DAVIS, LINDA W., Instr. of Biology (1989). BA 1967, Swarthmore Col.; MS 1988, Kansas St. U.

DAVIS, MARK A., Assoc. Sci. of Plant Pathology (1987). BS 1986, Kansas St. U.

DAVIS, OLGA I., Asst. Prof. of Speech (1994). BS 1984, U. of Redlands; MA 1986, PhD 1994, U. of Nebraska–Lincoln. (*)

DAVIS, OLIVE L., Co. Ext. Home Economist Emerita, Morton Co., Elkhart (1960). BS 1937, Northwestern St. Col., Oklahoma.

DAVY, DANIEL L., Asst. Prof. of Theatre (1995). BA 1986, MA 1988, PhD 1991, U. of California–Santa Barbara. (*)

DAWES, BARBARA E., Assoc. Dir. of Admissions (1979). BS 1961, St. Mary Col., Leavenworth; MS 1979, Kansas St. U.

DAWSON, JAMES R., Farm Mgmt. Assn. Fieldman (1992). BS 1975, Oklahoma St. U.

DAWSON, RITA T., Co. Ext. Agent, Family and Consumer Sciences, Coffey Co., Burlington (1971). BS 1971, Kansas St. U.

DAWSON, ROBERT E., Farm Management Association Fieldman (1976). BS 1973, MS 1974, Kansas St. U.

DAY, DENNIS J., Prof. of Landscape Arch. and Regional and Community Planning (1966). BSLA 1964, Michigan St. U.; MLA 1966, U. of Michigan; Registered Landscape Architect. (*)

DAY, DWIGHT D., Assoc. Prof. of Electrical Engineering and Computer Engineering (1990). BS 1980, MS 1981, PhD 1987, Oklahoma St. U. (*)

DAYTON, TIMOTHY A., Assoc. Prof. of English (1990). BA 1982, Siena Col.; MA 1984, SUNY, Albany; PhD 1990, Duke U. (*)

DAZY, LYNNE, Coord. for Upward Bound Math and Science (1996). BA 1991, U. of Santa Barbara; MS 1995, Kansas St. U.

DE BOWES, RICHARD M., Prof. and Head of Clinical Sciences (1982). DVM 1979, U. of Illinois; MS 1982, Washington St. U.; Diplomate 1985, American Col. of Vet. Surgeons. (*)

DE BOWES, LINDA J., Assoc. Prof. of Small Animal Medicine (1982). DVM 1981, Washington St. U.; MS 1985, Kansas St. U.; Diplomate 1986, American Col. of Vet. Internal Medicine. (*)

DE BRES, KAREN J., Assoc. Prof. of Geography (1990). BS 1973, MA 1974, U.of Missouri; PhD 1986, Columbia U. (*)

DE LUCCIE, MARY, Assoc. Prof. of Family Studies and Human Services (1991). BS 1976, MA 1982, U. of New Mexico; PhD 1987, Kansas St. U. (*)

DE MAND, JOHN WESLEY, Prof. Emeritus, Education (1940). AB 1937, U. of Kansas; MS 1940, Kansas St. U.; EdD 1953, U. of Colorado. (*)

DEB, N. C., Research Assoc. Temp. (1986). PhD 1986, Jadavpur U., India.

DEBELIUS, CHARLES A., Asst. Prof. of Arch. (1996). BA 1979, Dartmouth U.; MArch 1984, Harvard U. Registered Architect.

DEBEY, BRAD M., Asst. Prof. of Diagnostic Medicine/Pathobiology (1995). BS 1976, DVM 1988, Kansas St. U.; PhD 1993, Iowa St. U. (*)

DEES, JEROME STEELE, Prof. of English (1976). BA 1958, Catawaba Col.; MA 1961, Florida St. U.; PhD 1968, U. of Illinois, Urbana. (*)

DEGER, ELIZABETH C., Asst. Prof., Reference, KSU Libraries (1994). BS 1972, Kansas St. U.; MLS 1976, U. of Denver.

DEHON, CLAIRE LOUISE, Prof. of Modern Languages (1972). BA 1962, Royal Art Inst. of Brussels; MA 1964, MA 1969, MPhil 1971, PhD 1973, U. of Kansas. (*)

DEIHL, LINCOLN W., Prof. Emeritus of Management (1979). BS 1949, Bowling Green St. U.; MS 1951, Indiana U.; PhD 1964, Ohio St. U.

DEINES, DAN, Assoc. Prof. of Accounting (1982). BA 1970, Fort Hays St. U.; MS 1974, Emporia St. U.; CPA 1984, PhD 1985, U. of Nebraska. (*)

DEINES, VERNON PHILLIP, Prof. Emeritus of Landscape Arch. and Regional and Community Planning (1957). BS 1952, MRP 1962, Kansas St. U.; PhD 1977, U. of Pittsburgh. Registered Professional Engineer. Certified Planner. (*)

DEITCH, DAVID A., Assoc. Dir., Operations, Kansas Regents Educational Communications Cntr. (1984). BS 1974, U. of Florida; MA 1984, Kansas St. U.

DELANO, FREDRICK D., Administrator, Farm Management Association Program (1981). BS 1961, Kansas St. U.; MS 1972, U. of Missouri. (*)

DELGADO, ALBERTO L., Assoc. Prof. of Mathematics (1984). BA 1977, U. of Southern California; PhD 1981, U. of California. (*)

DELKER, DAVID G., Prof. and Section Head of Electronic Engineering Tech. (1984). AT 1973, KTI; BS 1977, MS 1979, Oklahoma St. U.

DENELL, ROBIN, Prof. of Biology, Molecular Geneticist, Agr. Exp. Sta.; Assoc. Dir. of Extramural Activities (1972). BS 1965, U. of California; MA 1968, PhD 1969, U. of Texas. (*)

DENNING, JANICE, Assoc. Prof. and Dir. of Social Work (1988). BSW 1976, MSW 1978, U. of Kansas.

DENNIS, STANLEY, Prof. of Pathology and Microbiology (1966). BS 1949, PhD 1961, U. of Sydney. (*)

DePAOLA, BRETT DAVID, Assoc. Prof. of Physics (1986). BA 1973, MS 1979, Miami U.; PhD 1984, U. of Texas, Dallas. (*)

DePEW, LESTER J., Prof. Emeritus of Entomology; Research Entomologist, Insects of SW Kansas, SW Research–Ext. Cntr. (1954). BS 1949, Colorado A&M; MS 1954, U. of Minnesota.

DESAI, ANAND S., Asst. Prof. of Finance (1994). BE 1973, Maharaja Sayajirao U.; MS 1975, Iowa St. U.; PhD 1985, U. of Michigan. (*)

DETTMER, PEGGY A., Prof., Education (1979). BME 1958, Pittsburg St. U.; MS 1976, PhD 1979, Kansas St. U. (*)

DEUS, ROBERT N., Pharmacist Emeritus, Lafene Health Ctr. (1975). BS 1965, U. of Kansas.

DEVAULT, JAMES E., Prof. of Electrical and Computer Engineering (1985). BS 1970, MS 1971, Michigan Tech. U.; MS 1977, U. of Michigan.

DEVAULT, GUNILE, Assoc. Registrar (1987). BS 1970, Kansas St. U.; MS 1972, U. of Illinois.

DeVILBISS, EDWARD A., Prof. Emeritus of Arch. (1975). BArch Eng 1953, U. of Colorado. Registered Architect.

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DeWITT, VICKIE, Dir., Facilities Resources (1988). BS 1971, Murray U.; MS 1988, Kansas St. U.

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DHUYVETTER, KEVIN C., Assoc. Prof. of Agricultural Economics; Ext. Agricultural Economist, Southwest (1990). BS 1984 N. Dakota St. U.; MS 1986, Iowa St. U.

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DICKINSON, TORRY, Asst. Prof. of Women's Studies (1996). BA 1975, Livingston Col., Rutgers U.; MA 1977, PhD 1983, St. U. of New York, Binghamton.

DICKSON, WILLIAM M., Farm Management Association Fieldman Emeritus (1961). BS 1956, MS 1961, Kansas St. U.

DIKEMAN, EARLINE F., Dir. of undergraduate chemistry labs (1980). BS 1969, S. Nazarene U.; MS 1972, Kansas St. U. (*)

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DONNELLY, DAVID P., Prof. of Accounting (1977). BS 1973, MBA 1977, Kansas St. U.; PhD 1983, U. of Illinois; CPA 1973, Kansas. (*)

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DOYLE, JAMES, Asst. Prof. of Philosophy (1993). BA 1986, MA 1989, Cambridge U.; PhD 1991, U. of Virginia.

DRAGSDORF, R. DEAN, Prof. Emeritus of Physics (1948). BS 1944, PhD 1948, Massachusetts Inst. of Tech. (*)

DRAKE, CALVIN L., Prof. of Animal Sciences and Industry; Beef Cattle Scientist, Agr. Exp. Sta. (1966). BS 1955, Kansas St. U.; MS 1959, U. of Arkansas; PhD 1963, Kansas St. U.

DRAKE, JEFFREY A., Research Asst. of Plant Pathology (1994). BS 1993, Kansas St. U.

DRAPER, GEORGE, Asst. Prof. of Philosophy (1993). BA 1979, PhD 1989, U. of California–Irvine. (*)

DRESCHER, V. ELIZABETH, Co. Ext. Agent, 4–H Youth Programs, Sedgwick Co., Wichita (1996). BS 1975, Virginia Polytechnic Inst.

DRESSLER, ROBERT E., Assoc. Head and Prof. of Mathematics (1970). BA 1965, U. of Rochester; MA 1966, PhD 1969, U. of Oregon. (*)

DRISS, ANN, Instr. Emeritus of Modern Languages (1967). AB 1952, Washburn U.; MS 1966, Emporia St. U.

DRITZ, STEVEN S., Asst. Prof. of Food Animal Medicine (1995). DVM 1990, U. of Minnesota; PhD 1995, Kansas State U.

DROUILLARD, JAMES S., Assoc. Prof. of Animal Sciences and Industry; Beef Feedlot Nutrition (1995). PhD 1989, U. of Nebraska. (*)

DRYDEN, MICHAEL W., Assoc. Prof. of Parasitology (1990). BS 1981, DVM 1984, Kansas St. U.; MS 1988, PhD 1990, Purdue U. (*)

DUBOIS, JAMES H., Assoc. Prof. of Interior Arch. (1983). BArch 1978, MArch 1985, Kansas St. U.

DUCKERS, HARRY G., JR., Co. Ext. Dir. Emeritus, Wyandotte Co., Kansas City (1944). BS 1943, Kansas St. U.

DUDZIAK, DONALD J., Adjunct Prof. of Mechanical and Nuclear Engineering (1989). BS 1956, U.S. Merchant Marine Academy; MS 1957, U. of Rochester; PhD 1963, U. of Pittsburgh.

DUKAS, STEPHEN, Assoc. Prof. of Finance (1990). BS 1981, BA 1989, PhD 1989, Florida St. U. (*)

DUMLER, JEFFERY K., Pharmacist, Lafene Health Ctr. (1993). BS 1974, U. of Kansas.

DUNBAR, JOHN O., Prof. and Dean Emeritus of Agr.; Dir. of the Agr. Exp. Sta. (1976). BS 1942, MS 1948, PhD 1954, Purdue U.

DUNCAN, STEVEN S., Asst. Prof. of Agricultural Economics, Grain Marketing, Agribusiness (1988). BS 1982, U. of Missouri; MS 1986, PhD 1988, Iowa St. U.

DUNCAN, STEWART R., Assoc. Prof.; Ext. Specialist, Crops and Soils, South Central (1991). BS 1977, MS 1988, PhD 1991, Kansas St. U.

DUNHAM, JAMES R., Prof. Emeritus of Animal Sciences and Industry; Ext. Specialist, Dairy Science (1969). BS 1959, MS 1967, PhD 1969, Kansas St. U.

DUNN, JON D., Prof. and Head of Anatomy and Physiology (1990). BA 1962, Col. of Idaho; PhD 1967, U. of Kansas (*).

DUNN, PAUL, Asst. Football Coach (1998). BS 1983, Pittsburgh.

DUNNING, BEVERLY K., Co. Ext. Dir., Sedgwick Co., Wichita (1964). BS 1963, Kansas St. U.; MS 1970, Wichita St. U.

DURGAN, JACK CLYDE, Prof. Emeritus of Interior Arch. (1954). BArch 1951, Oklahoma St. U.; MS 1957, Kansas St. U. Registered Architect. (*)

DUSHKIN, LELAH, Assoc. Prof. Emeritus of Sociology (1968). AB 1953, Smith Col.; MA 1957, PhD 1974, U. of Pennsylvania. (*).

DWYER, MATTHEW B., Asst. Prof. of Computing and Information Sciences (1995). BS 1985, U. of Rochester; MS 1989, U. of Mass. at Boston; PhD 1995, U. of Mass. at Amherst. (*)

DYCK, NORMA J., Prof., Education (1976). BA 1957, Bethany Col.; MS 1970, EdD 1972, U. of Kansas. (*)

DYER, RUTH A., Prof. of Electrical and Computer Engineering and Asst. to the Provost (1983). BS 1973, MS 1975, Kansas St. U.; PhD 1980, U. of Kentucky. (*)

DYER, STEPHEN A., Prof. of Electrical and Computer Engineering (1983). BS 1973, MS 1974, PhD 1977, Kansas St. U. (*)

DZEWALTOWSKI, DAVID A., Assoc. Prof. and Head of Kinesiology (1987). BA 1983, W. Washington U.; MS 1985, W. Virginia U.; PhD 1987, U. of Iowa. (*)

EALY, ROBERT P., Prof. Emeritus of Landscape Arch. and Regional and Community Planning (1969). BS 1941, Oklahoma St. U.; MS 1946, Kansas St. U.; PhD 1955, Louisiana St. U. Registered Landscape Architect. (*)

EASTERDAY, WILDA L., Co. Ext. Agent, Family and Consumer Sciences; Meade Co., Meade (1990). BS 1966, Kansas St. U.

EBADI, YAR M., Dean of Bus. Admin.; Prof. of Management (1983). BS 1968, Kabul U.; MS 1970, Georgia Inst. of Tech.; MBA 1974, DBA 1977, Indiana U. (*)

EBERLE, WILLIAM M., Assoc. Prof. of Agronomy; Ext. Spec., Land Resources (1973). BS 1968, Purdue U.; MS 1970, PhD 1973, U. of Illinois.

ECKELS, STEVEN J., Assoc. Prof. of Mechanical and Nuclear Engineering (1993). BS 1988, Dordt College; MS 1991, PhD 1993, Iowa St. U. (*)

ECKHOFF, N. DEAN, Prof. of Mechanical and Nuclear Engineering; Dir. of Cntr. for Energy Studies (1961). BS 1961, MS 1963, PhD 1968, Kansas St. U.; Professional Engineer, 1978. (*)

ECKLUND, ROBERT D., Staff Physician, Lafene Health Cntr. (1979). BS 1970, Virginia Poly. Inst.; MD 1974, Medical Col. of Virginia.

EDELBLUTE, DALE H., Prof. Emeritus; Area Ext. Specialist, Crops and Soils (1947). BS 1934, Kansas St. U.

EDGAR, JAMES H., Prof. of Chemical Engineering (1988). BS 1981, U. of Kansas; MS 1982, PhD 1987, U. of Florida. (*)

EDGETT–MINSON, STACIE L., Co. Ext. Agent, Ag, Trego Co., WaKeeney (1996). BS 1995, Kansas St. U.

EDWARDS, A. THORNTON, Dir. Emeritus of Housing and Dining Services (1945). BS 1941, MS 1946, Kansas St. U.

EDWARDS, ALVIN J., Prof. Emeritus of Food Animal Medicine (1975). DVM 1959, PhD 1979, Kansas St. U. (*)

EDWARDS, JENNIFER, Assoc. Prof. of Music (1973). BA 1967, Stephen F. Austin St. Col.; MM 1970, U. of Oregon. (*)

EDWARDS, MARK D., Unit Dir., Housing and Dining Services (1983). BS 1982, U. of Arizona; MS 1986, Kansas St. U.

EDWARDS, ROBERT L., Prof. of Music (1972). BM 1961, MM 1963, Wichita St.; DMA 1972, U. of Oregon. (*)

EHLER, STANLEY W., Assoc. Prof. of Agronomy (1972). BS 1962, MS 1964, U. of Southern Illinois; PhD 1974, U. of Missouri. (*)

EILERT, SCOTT, Video Dir., Intercollegiate Athletics (1993). BS 1991, Kansas St. U.

EISELEIN, GREGORY, Assoc. Prof. of English (1993). BA 1987, U. of Idaho; PhD 1993, U. of Iowa. (*)

EITNER, WALTER H., Prof. Emeritus of English (1954). AB 1948, U. of Denver; AM 1949, U. of Michigan; PhD 1959, U. of Denver. (*)

EL BARMI, HAMMOU, Assoc. Prof. of Statistics (1995). Diploma 1987, U. Mohamed V, Morocco; MS 1989, PhD 1993, U. of Iowa. (*)

ELBRADER, DENNIS R., Co. Ext. Agent, Ag, Cherokee Co., Columbus (1995). BS 1987, Southwest Missouri St U.

ELCOCK, DOUGLAS A., Senior Business and Finance Officer, Agriculture (1989). BS 1971, U. of Kansas; MS 1986, Kansas St. U.

ELDER, NELDA J., Assoc. Prof., Chair, Collection Dev., KSU Libraries (1972). BA 1963, Wichita St. U.; MLS 1970, Emporia St. U.

ELKINS, RICHARD N., Dir. Emeritus of Admissions (1966). BS 1963, MS 1963, Kansas St. U.

ELLIOTT, DENNIS R., Phys. Asst., Lafene Health Cntr. (1981). BS 1977, Wichita St. U.; Phys. Asst. Program, 1977, Wichita St. U.

ELLITHORPE, VERA M., Prof. Emerita; Ext. Specialist, Family Housing and Safety (1938). BS 1935, MS 1939, Kansas St. U.; PhD 1963, Ohio St. U.

ELMORE, CAROL, Instr., Reference KSU Libraries (1996). BA 1969, Greenville Col.; MA 1975, U. of Missouri.

ELMORE, RONNIE G., Associate Dean and Prof. of Theriogenology (1990). BA 1969, Greenville College; BS 1970, DVM 1972, U. of Illinois; MS 1978, U. of Missouri. Diplomate 1977, American Col. of Theriogenologists.

ELSEA, STANLEY W., Assoc. Dean and Assoc. Prof. of Management (1985). BS 1954, MBA 1981, Kansas St. U.; DBA 1984, Indiana U. (*)

ELZINGA, AGNES L., Student Personnel Specialist, Education (1987). BS 1983, MS 1986, Kansas St. U.

ELZINGA, RICHARD J., Prof. of Entomology; Research Entomologist, Arthropodmorphology and Mite Systematics, Agr. Exp. Sta. (1961). BS 1955, MS 1956, PhD 1960, U. of Utah. (*)

EMIZET, KISANGANI, Asst. Prof. of Political Science (1994). PhD 1994, U. of Iowa. (*)

ENGLAND, NAOMI A., Co. Ext. Agent Emerita, Family and Consumer Sciences, Sedgwick Co., Wichita (1976). BS 1960, Central Oklahoma St. Col.; MS 1968, Kansas St. U.

ENOCHS, LARRY G., Assoc. Prof., Education (1983). BA 1967, Indiana U.; MA 1971, U. of Rochester; EdD 1982, Indiana U. (*)

EPPS, JAMES, Assoc. Athletic Dir. (1981). BA 1969, Washburn U.; MS 1972, Pittsburg St. U.

ERB, W. ALAN, Asst. Prof. of Hort., Forestry, and Recreation Resources (1994). BS 1981, Pennsylvania St. U.; MS 1983, U. of Arkansas; PhD 1987, U. of Maryland (*).

ERDWIEN, NEIL C., Assoc. Intersystems Applications Support Specialist, Computing and Telecommunications Activities (1984). BS 1984, MS 1989, Kansas St. U.

ERHART, ANDREW B., Prof. Emeritus, SW Kansas Branch Agr. Exp. Sta. (1931). BS 1933, Kansas St. U.

ERICKSON, DONALD B., Prof. of Agricultural Economics; Ext. Agricultural Economist, Marketing (1966). BS 1955, MS 1960, Wyoming U.; PhD 1964, Purdue U. (*)

ERICKSON, HOWARD H., Prof. of Anatomy and Physiology; Research Cardiovascular Physiologist (1981). BS 1957, DVM 1959, Kansas St. U.; PhD 1966, Iowa St. U. (*)

ERICKSON, LARRY EUGENE, Prof. of Chemical Engineering; Dir. of Hazardous Substance Research Cntr. (1964). BS 1960, PhD 1964, Kansas St. U. (*)

ERNST, F. GENE, Prof. Emeritus of Arch. and Regional and Community Planning (1967). BArch 1953, Kansas St. U.; MArch (Urban Design) 1971, U. of Washington. Registered Architect. (*)

ERPELDING, LAWRENCE H., JR., Prof.; Assoc. Dean of Agr. (1977). BS 1965, MS 1969, PhD 1972, Kansas St. U.

ERSKIN, LORI A., Co. Ext. Agent, Family and Consumer Sciences, Stanton Co., Johnson (1983). BS 1983, Kansas St. U.

ETHRIDGE, KAMIE, Asst. Women's Basketball Coach (1996). BS 1987, U. of Texas.

ESHBAUGH, ELBERT L., Asst. Prof. Emeritus of Entomology (1945). BS 1936, MS 1951, Kansas St. U.

EUSTACE, WALTER D., Prof. of Grain Science and Industry; Milling Tech. Research Scientist, Agr. Exp. Sta. (1973). BS 1959, MS 1962, PhD 1967, Kansas St. U. (*)

EVANS, CINDY L., Co. Ext. Agent, Family and Consumer Sciences, Shawnee Co., Topeka (1990). BS 1980, Fort Hays St. U.; MS 1991, Kansas St. U.

EVANS, THOMAS MARION, Prof. Emeritus of Health, Physical Education, and Recreation (1942). BS 1930, Kansas St. U.; MS 1942, U. of Michigan; PEDir 1958, Indiana U. (*)

EVERSMEYER, MERLE G., Adjunct Assoc. Prof. of Plant Pathology; Research Cereal Rust Plant Pathologist, USDA, SEA-AR (1965). BS 1966, MS 1969, PhD 1971, Kansas St. U. (*)

EVERSON, EVERETT K., Farm Management Association Fieldman (1974). BS 1973, MS 1974, Kansas St. U.

EWANOW, LYNN, Asst. Dean of Arch., Planning, and Design; Assoc. Prof. of Landscape Arch. and Regional and Community Planning (1979). BA 1975, Keuka Col.; MLA 1979, SUNY, Col. of Environmental Science and Forestry. (*)

EXDELL, JOHN B., Assoc. Prof. of Philosophy (1972). BA 1967, Dickinson Col.; PhD 1973, U. of Texas at Austin. (*)

EXDELL, JUDITH P., Instr. Reference, KSU Libraries (1994). BA 1967, Dickinson Col.; MLS 1991, Emporia St. U.

EYESTONE, CECIL L., Assoc. Prof. Emeritus; Ext. Specialist, 4–H Youth (1943). BS 1944, Kansas St. U.; MS 1958, Colorado St. U.

EYESTONE, GREGG R., Co. Ext. Agent, Hort.; Lyon Co., Emporia (1990). BS 1986, Kansas St. U.

FABRIS, JON, Asst. Football Coach (1997). BS 1980, U. of Mississippi.

FAIDLEY, DONALD L., Fieldman Emeritus, Farm Management Association (1956). BS 1953, Kansas St. U.

FAIRBANKS, GUSTAVE EDMUND, Prof. Emeritus of Biological and Agricultural Engineering; Ag. Exp. Sta. (1941). BS 1941, MS 1950, Kansas St. U.; Professional Engineer, 1948. (*)

FAIRCHILD, FRED, Assoc. Prof. of Grain Science and Industry (1995). BS 1963, MS 1964, Kansas St. U.

FAIRMAN, JOHN T., Asst. VP, for Institutional Advancement/U. Relations (1987). BS 1966, Central Michigan U.

FALLIN, JANA R., Prof. of Music Education and Education (1988). BME 1968, Baylor U.; MM 1974, PhD 1979, U. of Texas. (*)

FALLIN, DAVID J., Instr. of Marketing and International Business (1996). MBA 1990, Kansas St. U.; BA 1988, U. of Northern Iowa.

FALLON, DON, Coord. Religious Activities (1989). BA 1948, Wartburg Col., Iowa; BD, M DIV 1952, Wartburg Seminary, Iowa.

FAN, LIANG-TSENG, Univ. Distinguished Prof. of Chemical Engineering; Dir., Inst. for Systems Design and Optimization; Assoc., Inst. for Environmental Research (1958). BS 1951, National Taiwan U.; MS 1954, Kansas St. U.; MS 1958, PhD 1957, West Virginia U. (*)

FARLEY, ELIZABETH KAY, Asst. Dir., Bookstore and Retail, K-State Student Union (1989). BA 1982, National U. Irrive, California.

FARMER, DIANA M., Asst. Prof., Collection Development, KSU Libraries (1972). BA 1971, MLS 1972, Emporia St. U.

FARMER, EARL L., Prof. Emeritus of Animal Sciences and Industry; Dairy Cattle Research Physiologist, Agr. Exp. Sta. (1949). BS 1948, U. of Missouri; MS 1957, Kansas St. U.; PhD 1963, U. of Wisconsin. (*)

FARMER, LARRY A., Prof. Emeritus of Electronic Engineering Tech. (1968). AS 1955, Sayre Junior Col.; BS 1957, Oklahoma St. U.; MS 1971, Kansas St. U.

FARRAND, DOROTHY M., Psychologist, U. Counseling Services (1989). BA 1977, MA 1981, PhD 1989, Witwatersrand, South Africa.

FARRELL, EUGENE PATRICK, Prof. Emeritus of Grain Science and Industry (1949). BS 1935, MS 1952, Kansas St. U.

FATELEY, WILLIAM G., U. Distinguished Prof. Emeritus of Chemistry (1972). AB 1951, Franklin Col.; PhD 1956, Kansas St. U. (*)

FATEMI, ALI, Prof. and Head of Finance (1980). BA 1972, Tehran Bus. Col.; MBA 1975, PhD 1979, Oklahoma St. U. (*)

FATTAEY, A. ABE, U. Engineer, Facilities Planning (1988). BA 1982, Kansas St. U.

FAUSETT, MARVIN R., Prof. of Agricultural Economics; Ext. Agricultural Economist, Southeast (1979). BS 1961, MS 1970, PhD 1979, U. of Missouri.

FAW, RICHARD EARL, Prof. of Mechanical and Nuclear Engineering; Dir. of Nuclear Reactor Facility (1962). BS 1959, U. of Cincinnati; PhD 1962, U. of Minnesota; Professional Engineer, 1970. (*)

FEATHERSTONE, ALLEN M., Dir. of Graduate Studies; Prof. of Agricultural Economics (1986). BS 1982, U. of Wisconsin; MS 1984, PhD 1986, Purdue U. (*)

FECHTER, RICHARD H., Co. Ext. Agent, Agriculture and 4–H, Elk Co., Howard (1994). BS 1993, Kansas St. U.

FEDDE, M. ROGER, Prof. of Anatomy and Physiology; Research Neurophysiologist (1964). BS 1957, Kansas St. U.; MS 1959, PhD 1963, U. of Minnesota. (*)

FEDDER, NORMAN J., Distinguished Prof. of Speech (1970). BA 1955, Brooklyn Col.; MA 1956, Columbia U.; PhD 1962, New York U. (*)

FEES, BRONWYN, Asst. Prof. of Family Studies and Human Services (1998). BS 1984, MS 1996, U. of Nebraska–Kearney; PhD 1998, Iowa St. U.

FELTNER, KURT C., Prof. Emeritus; Dir.-at-Large, NC Association of AES Directors (1982). BS 1957, MS 1959, U. of Wyoming; PhD 1963, U. of Arizona. (*)

FENTON, DONALD L., Prof., Mechanical and Nuclear Engineering (1986). BS 1969, Kansas St. U.; MS 1970, PhD 1974, U. of Illinois. (*)

FENWICK, BRADLEY W., Prof. of Pathology (1986). DVM 1981, MS 1983, Kansas St. U.; PhD 1985, U. of California; Diplomate 1988, American Col. of Vet. Microbiology. (*)

FERGUSON, CLYDE RANDOLPH, Assoc. Prof. Emeritus of History (1960). BA 1955, U. of Oklahoma; MA 1957, Clemson; PhD 1960, Duke U. (*)

FERGUSON, JEFF, Asst. Trainer (1997). BS 1993, Clemson; MS 1995, U. of Texas–Arlington.

FEYERHERM, ARLIN M., Prof. Emeritus of Statistics (1953). BS 1946, U. of Minnesota; MS 1948, U. of Iowa; PhD 1952, Iowa St. U. (*)

FEYERHARM, WILLIAM R., Asst. Dean Emeritus of Arts and Sciences; Assoc. Prof. (1979). AB 1959, Carleton Col.; MA 1964, PhD 1971, U. of Wisconsin.

FICK, WALTER H., Assoc. Prof. of Agronomy, Range Management Research Agronomist, Agr. Exp. Sta. (1978). BS 1973, MS 1975, U. of Nebraska; PhD 1978, Texas Tech. U. (*)

FICKEN, WILLA L., Co. Ext. Home Economist Emerita, Grant Co., Ulysses (1957). BS 1930, Kansas St. U.

FIGURSKI, DONALD L., Prof. Emeritus; Ext. Economist, Northeast (1966). BS 1952, MS 1959, Colorado St. U.

FINA, LOUIS R., Prof. Emeritus of Biology; Microbiologist, Agr. Exp. Sta. (1954). AB 1942, MS 1948, PhD 1950, U. of Illinois. (*)

FINGLAND, ROGER B., Prof. of Small Animal Surgery (1987). DVM 1981, U. of Missouri; MS 1985, Ohio St. U.; Diplomate 1987, American Col. of Vet. Surgeons. (*)

FINK, CAROL J., Co. Ext. Agent, Pottawatomie Co., Westmoreland (1980). BS 1977, MS 1991, Kansas St. U.

FINK, TONI, Career Services Coord., Col. of Tech. and Aviation (1992). BA 1982, Montana St. U.; MEd 1993, Colorado St. U.

FINLEY, PHILIP B., Assoc. Prof. Emeritus; Area Ext. Dir. (1967). BS 1951, MS 1956, Kansas St. U.

FINLEY, MELISSA R., Asst. Prof., Clinical Sci. (1996). DVM 1991, Col. St. U.

FINNEGAN, MICHAEL, Prof. of Anthropology (1973). BA 1967, MA 1970, PhD 1972, U. of Colorado. Diplomate 1978, American Board of Forensic Anthropology. (*)

FISCHER, EMIL C., Prof. and Dean Emeritus, Col. of Arch., Planning, and Design (1955). AB 1929, Columbia Col.; BS in Arch. 1932, MS in Arch. 1933, Columbia U.; Registered Architect. (*)

FISH, G. KEITH, Co. Ext. Agricultural Agent Emeritus, Trego Co., WaKeeney (1958). BS 1943, Kansas St. U.

FISH, TRACY K., Research Asst. of Plant Pathology (1994). BS 1994, Kansas St. U.

FISHER, CARL D., Asst. Prof. of Military Science (1985). BS 1977, U. of Kansas.

FISHER, DANNY G., Assoc. Prof. of Accounting (1991). BS 1985, MAcc 1988, Kansas St. U.; CPA 1985, Kansas U.; PhD 1992, U. of Missouri. (*)

FISHER, SHANNON C., Asst. Controller, Sponsored Projects Accounting (1990). BS 1984, MAcc 1985, Kansas St. U.; CPA 1986, Kansas.

FISHER, STEVEN D., Prof.; Ext. Specialist, 4–H Youth Programs (1971). BS 1971, MS 1977, Kansas St. U.

FITZGERALD, DONALD M., Visiting Prof. of Journalism (1984). BA 1942, U. of Kansas.

FJELL, DALE L., Prof., Ext. Specialist, Crops Production (1982). BS 1974, Kearny St. Col.; MS 1978, Wayne St. Col.; PhD 1982, Kansas St. U. (*)

FJELL, SHERYL, Coord. of Directed Study Program, Academic Assistance Cntr. (1991). BS 1977, Kansas St. U. (*)

FLAHERTY, GLASSEL D., Asst. Instr., KABSU (1977). BS 1974, Kansas St. U.

FLAHERTY, ROBERTA D., Instr. of Education; Exec. Dir. of NACADA (1970). BEd 1970, Washburn U. of Topeka; MS 1975, Kansas St. U.

FLAMING, SHAROLYN K., Co. Ext. Agent, Family and Consumer Sciences, Riley Co., Manhattan (1983). BS 1982, Bethel Col.; MS 1987, Kansas St. U.

FLANAGAN, BRUCE, Prof. Emeritus of Speech (1966). BS 1953, Western Michigan U.; MS 1958, Southern Illinois U.; PhD 1966, U. of Florida. (*)

FLANAGAN, MARTHA A., Co. Ext. Agent, Family and Consumer Sciences, Cherokee Co., Columbus (1995). BS 1975, Pittsburg St. U.

FLICKINGER, CAROL, Academic Advisor, School of Journalism and Mass Communications (1997). BA 1991, MA 1992, U. of Toledo.

FLINCHBAUGH, BARRY L., Prof. of Agricultural Economics; Ext. St. Leader, Agricultural Economics (1971). BS 1964, MS 1967, PhD 1971, Purdue U.

FLINN, PAUL W., Adjunct Asst. Prof. of Entomology, USDA Grain Marketing Research Cntr. (1988). BS 1977, U. of Michigan; MS 1981, PhD 1984, Pennsylvania St. U. (*)

FLITER, JOHN, Asst. Prof. of Political Science (1994). PhD 1993, U. of Maryland. (*)

FLORES, ROLANDO, Assoc. Professor of Grain Science and Industry (1996). BS 1975, U. of Costa Rica; MS 1981, Iowa State U.; PhD 1989, Kansas St. U.

FLORES, SANDRA A., Asst. Prof. of Communications (1996). BS 1972, MA 1978, Iowa State U.; PhD 1997, Kansas St. U.

FLOUER, JACK, Prof. Emeritus and Head of Music (1971). BA 1960, Marshall U.; MM 1962, Eastman School of Music; DM 1971, Indiana U. (*)

FLOYD, LON, Athletics Development Officer (1996). BS 1967, MS 1971, Kansas St. U.

FOERSTER, BERND, Prof. and Dean Emeritus, Col. of Arch., Planning, and Design (1971). BS in Arch. 1954, U. of Cincinnati; MArch 1957, Rensselaer Polytechnic Inst. Registered Architect. (*)

FOLLAND, NATHAN O., Prof. of Physics (1966). BA 1959, Concordia Col.; PhD 1965, Iowa St. U. (*)

FOLTZ–SCHLEGEL, KRISTEN A. Co. Ext. Agent, Family and Consumer Sciences; Haskell Co., Sublette (1991). BS 1987, Southeast Missouri St. U.

FORAN, SEAN T., Asst. Prof. of Philosophy (1996). BA 1988, UCLA; PhD 1997, UCLA.

FORD, ROY D., Co. Ext. Agricultural Agent Emeritus, Sumner Co., Wellington (1964). BS 1964, MS 1975, Oklahoma St. U.

FORSHEE, JOHN D., Co. Ext. Agent, Agr., Rooks Co., Stockton (1989). BS 1982, Kansas St. U.

FORSYTH, PENNY J., Temp. Asst. to the Dean of Engineering (1984). BS 1966, Michigan St. U.

FORSYTH, RICHARD H., Prof. of Landscape Arch. and Regional and Community Planning (1979). BSLA 1967, Michigan St. U.; MLA 1969, Harvard U. Registered Landscape Architect. (*)

FORSYTH, SARAH W., Asst. Dir. for Fitness and Aquatics, Recreational Services (1993). BFA 1972, U. of North Texas; MS 1990, Texas Christian U.

FORTNEY, WILLIAM D., Asst. Prof. of Small Animal Medicine (1977). BS 1970, DVM 1974, U. of Missouri.

FOSTER, DONALD E., U. Registrar (1965). BS 1960, MS 1961, Kansas St. U.

FOSTER, LOUIS A., Asst. Prof. of Anatomy and Physiology (1994). DVM 1982, Univ. of Illinois; PhD 1990, Michigan State U.

FOWLER, EDDIE R., Prof. of Electrical and Computer Engineering (1962). BS 1957, MS 1965, Kansas St. U.; PhD 1969, Oklahoma St. U. (*)

FOX, CINDY, Asst. Athletic Dir. (1995). BA 1985, U. of Washington.

FOX, JOHN (SEAN) A., Asst. Prof. of Agricultural Economics; Food Safety, Agricultural Marketing (1994). BS 1989, U. College, Dublin, Ireland; PhD 1994, Iowa St. U. (*)

FOX, KENNETH L., Prof. Emeritus of Accounting (1969). BA 1953, MA 1960, Baylor U.; CPA 1958, Texas, Louisiana; CPA 1971, Kansas; PhD 1966, U. of Illinois. (*)

FOX, MARK, Asst. Basketball Coach (1994). BS 1989, Eastern New Mexico U.; MS 1994, U. of Kansas.

FOX, RODNEY O., Assoc. Prof. of Chemical, Electrical and Computer Engineering (1989). BS 1982, MS 1985, PhD 1987, Kansas State U. (*)

FRAHM, ROBERT L., Adjunct Clinical Instr. of Med. Tech. (1976). BM 1958, Bethany Col.

FRAIN, DAVID, Special Asst. to the Dir. of McCain Auditorium (1988). BS, BA 1988, U. of Colorado.

FRANCIS, EUGENE N., Prof. Emeritus; Ext. Specialist, Animal Science, Northeast (1967). BS 1949, Kansas St. U.; MS 1953, Iowa St. U.

FRANCISCO, JOHN F., Assoc. Prof. of Computer Engineering Tech. (1983). AT 1982, BS 1969, Fort Hays St. U.

FRANK, RONALD E., Prof., TV Coord., Communications (1985). BA 1972, Fort Hays St. U.; MA 1979, Kansas St. U.

FRANKE, JAMES L., Assoc. Prof. of Political Science (1984). BS 1972, Bradley U.; MA 1974, PhD 1979, N. Illinois U. (*)

FRANKO, CAROL S., Assoc. Prof. of English (1990). BA 1983, The American U.; MA 1984, PhD 1990, U. of Wisconsin–Madison. (*)

FRANSEEN, EVAN, Adjunct Asst. Prof. of Geology (1989). BS 1981, MS 1985, PhD 1988, Wisconsin U.

FRASER, TRACEY, Dir., Career and Employment Services (1990). BS 1985, MS 1987, Kansas St. U.

FRAZIER, EVELYN M., Instr. of English (1984). BS 1955, Sterling Col.; MA 1970, Kansas St. U.

FRAZIER, LESLIE P., Prof. Emeritus; Ext. Specialist, Organization and Leadership Dev. (1943). BS 1941, Oklahoma St. U.; MA 1962, Colorado St. U.

FREELAND, GLORIA B., Assoc. Dir. of Student Publications; Asst. Prof. of Journalism and Mass Communications (1983). BA 1975, MBA 1983, Kansas St. U.

FREEMAN, ARTHUR S., Asst. Prof. of SW Research Ext. Cntr. (1989). BS 1979, MS 1983, U. of Florida; PhD 1987, New Mexico St. U.

FREEMAN, LISA C., Asst. Prof. of Anatomy and Physiology (1994). DVM 1986, Cornell Univ.; PhD 1989, Ohio State U. (*)

FREEZE, JERRY D., Farm Management Association Fieldman (1979). BS 1977, MS 1979, U. of Missouri.

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FREY, ALICE L., Co. Ext. Agent Emerita, Family and Consumer Sciences, Grant Co., Ulysses (1955). BS 1955, MS 1968, Kansas St. U.

FREY, MARSHA L., Prof. of History (1973). BA and BSc in Educ. 1967, MA 1968, PhD 1971, Ohio St. U. (*)

FREY, R. SCOTT, Prof. of Sociology; Agr. Exp. Sta. (1985). BS 1973, NW Missouri St. U.; MA 1976, Drake U.; PhD 1980, Colorado St. U. (*)

FREY, RUSSELL A., Prof. of Nutritional Physiology (1963). DVM 1952, PhD 1970, Kansas St. U.; Diplomate 1988, American Col. of Vet. Nutrition. (*)

FRIEBE, BERND RALF, Res. Prof. of Plant Pathology; Research cytogeneticist (1991). MS 1975, PhD 1977, Free U. of Berlin.

FRIEDMANN, EUGENE A., Prof. Emeritus of Sociology (1965). AB 1947, MA 1949, PhD 1953, U. of Chicago. (*)

FRIEDMANN, ROGER A., Inst. of English, BA 1978, MA 1987, Kansas St. U.

FRIEMAN, JEROME, Prof. of Psychology (1968). BA 1963, MS 1965, Western Reserve U.; PhD 1969, Kent St. U. (*)

FRISBIE, ROBERT L., Co. Ext. Agent, Agr., Pawnee Co., Larned (1971). BS 1969, Kansas St. U.

FRITCHEN, DAVID R., Assoc. Prof. of Architectural Engineering and Construction Science (1993). BS 1971, Kansas St. U.; MS 1977, U. of Washington

FRITH, THOMAS J., Dir. Emeritus, Housing and Dining Services (1965). BA 1960, MS 1963, EdS 1965, U. of Iowa.

FRITZ, JOHN O., Assoc. Prof. of Agronomy; Forage Crops Research, Agr. Exp. Sta. (1990). BS 1978, MS 1981, Purdue U.; PhD 1988, U. of Illinois. (*)

FRITZ, STEVEN, Asst. Track and Field Coach (1997). BS 1992, Kansas St. U.

FROMM, KENNETH W., Co. Ext. Agricultural Agent Emeritus Mitchell Co., Beloit (1953). BS 1951, Kansas St. U.; MEd 1964, Colorado St. U.

FRY, JACK D., Assoc. Prof. of Hort.; Turfgrass Management (1991). BS 1982, Kansas St. U.; MS 1984, U. of Maryland; PhD 1987, Colorado St. U. (*)

FRYER, E. BETH, Prof. Emerita of Foods and Nutrition; Agr. Exp. Sta. (1959). BS 1945, U. of New Mexico; MS 1949, Ohio St. U.; PhD 1959, Michigan St. U. (*)

FRYER, HOLLY CLAIRE, Prof. Emeritus of Statistics (1940). BS 1931, U. of Oregon; MS 1933, Oregon St. U.; PhD 1940, Iowa St. U. (*)

FULLAGAR, CLIVE J. A., Assoc. Prof. of Psychology (1988). BA 1977, MA 1981, PhD 1986, U. of Witwatersrand. (*)

FULTZ, PATRICIA TROTTER, Assoc. Prof.; Ext. Spec., 4–H Youth Programs (1993). BS 1970, Colorado St. U.; MS 1980, EdD 1989, Oklahoma St. U.

FULTZ, WILLIAM E., Co. Ext. Agent Emeritus, 4–H Youth, Sedgwick Co., Wichita (1962). BS 1961, Kansas St. U.; MEd 1964, Wichita St. U.

FUNDERBURGH, JAMES, Assoc. P.rof., Biology (1983). BA 1965, U. of Texas at Austin; MS 1969, U. of Minnesota; PhD 1973, U. of Wisconsin. (*)

FUNG, DANIEL Y. C., Prof. of Animal Sciences and Industry: Food Microbiologist, Agr. Exp. Sta. (1978). BS 1965, International Christian U., Japan; MSPH 1967, U. of North Carolina; PhD 1969, Iowa St. U. (*)

FUNKHOUSER, SARA, Prof. Emeritus of Music (1976). BM 1974, MM 1975, DM 1982, U. of Missouri, Kansas City. (*)

FURBEE, ROBERT R., Assoc. Prof; Head, Dept. of Communications (1992). BA 1972, BS 1977, MS 1978, Ohio St. U.

FURRY, TINSLEY S., Coord. of the Academic and Career Information Center (1997). BA 1991, Denison U.; MS 1997, Kansas St. U.

GAFFORD, NANCY M., Co. Ext. Agent, Nemaha Co., Seneca (1958). BS 1958, Kansas St. U.

GALITZER, STEVEN J., Asst. U. Industrial Hygienist, Public Safety; Adjunct Asst. Prof. of Industrial and Manufacturing Systems Engineering (1988). BS 1974, MS 1978, PhD 1984, Kansas St. U. (*)

GALLAGHER, RICHARD R., Prof. of Electrical and Computer Engineering (1968). BS 1964, MS 1966, PhD 1968, Iowa St. U. (*)

GALLAND, JOHN C., Assoc. Prof. of Food Animal Production (1990). BA 1971, Adams St. Col.; MS 1979, PhD 1985, U. of California. (*)

GAMEZ, ROBERT, Assoc. Dir. of Student Financial Assistance (1995). BS 1988, MS 1995, Iowa St. U.

GARAVITO, C. LUCIA, Assoc. Prof. of Modern Languages (1986). BA 1974, Universidad Pedagogica Nacional, Bogota, Colombia; MA 1979, PhD 1982, U. of Kansas. (*)

GARCIA, JANE MERTZ, Asst. Prof. of Family Studies and Human Services (1996). BS 1978, Kansas St. U.; MS 1981, U. of Nebraska–Lincoln; PhD 1996, U. of South Alabama. (*)

GARCIA, ROBERT G., Instr. of Family Studies and Human Services (1996). BS 1981, U. of Nebraska–Lincoln; MBA 1992, U. of South Alabama; MS 1993, U. of Nebraska–Lincoln.

GARDNER, RICHARD L., Instr., Ext. Energy Service (1981). BS 1969, Kansas St. U.

GARG, LALIT C., Research Assoc. of Biochemistry (1982). PhD 1980, U. of Jawahara, India.

GARRETT, G. KAY, Research News Coord., Office of Research and Sponsored Programs (1984). BA 1967, Bowling Green St. U.; MS 1982, Kansas St. U.

GARRIOTT, STACI R., Co. Ext. Agent, 4–H Youth Programs, Reno Co., Hutchinson (1997). BS 1997, Kansas St. U.

GARRISON SR., WILLIAM E., Asst. Prof. of Professional Pilot Program (1979). BA 1971, Park Col.; All flight ratings, airplane and helicopter.

GARTEN, CARL H., Co. Ext. Dir., Saline Co., Salina (1978). BS 1976, MS 1987, Kansas St. U.

GARVIN, RICK L., Assoc. Data Base Administrator of Administrative User Services, Computing and Telecommunications Activities (1972). BA 1970, San Jose St. U.

GARVIN, W. LAWRENCE, Prof. Emeritus of Arch. (1985). BS 1948, Washington and Lee U.; BArch 1952, Ohio St. U.; MArch 1958, Massachusetts Inst. of Tech.; Registered Architect.

GARZIO, ANGELO C., Prof. Emeritus of Art (1957). BA 1949, BS 1949, Syracuse U.; Diploma di Profitto, 1950, U. of Florence, Italy; MA 1954, MFA 1955, St. U. of Iowa. (*)

GAST, KAREN L. B., Assoc. Prof. of Hort.; Ext. Specialist, Post Harvest (1989). BS 1978, MS 1981, Iowa St. U.; PhD 1988, U. of New Hampshire. (*)

GATES, DELL E., Prof. Emeritus; Ext. St. Leader, Entomology Program (1948). BS 1948, MS 1952, Kansas St. U.

GATEWOOD, BARBARA, Prof. of Clothing, Textiles, and Interior Design; Agr. Exp. Sta. (1976). BS 1968, Syracuse U.; MS 1972, PhD 1976, P[illegible]

GATEWOOD, EDGAR C., JR., Asst. Architect, Facilities Planning (1986). BA 1977, U. of Arizona; BA 1970, U. of Randolph–Macon. Registered Architect.

GAUGHAN, EARL M., Assoc. Prof. of Equine Surgery (1989). DVM 1981, U. of Georgia; Diplomate 1990, American Col. of Vet. Surgeons. (*)

GAUGHAN, KATHY, Temp. Instr., Small Animal Medicine (1993). BS 1990, DVM 1992, Kansas St. U.

GEHRT, JENNIFER, Assoc. Dir., Human Resources (1977). BS 1984, Kansas St. U.

GEISER, CHERIE J., Assoc. Prof., Interlibrary Loan, KSU Libraries (1978). BA 1972, U. of N. Dakota; MLS 1978, U. of Missouri.

GEISSLER, WINNIFRED J., Assoc. Prof. Emerita of English (1954). B Music Ed 1940, Bethany Col.; MS 1954, PhD 1976, Kansas St. U.

GEORGE, HERSCHEL C., Co. Ext. Agent, Agr., Miami Co., Paola (1970). BS 1970, MS 1983, Kansas St. U.

GERHARD, GARY W., Assoc. Prof.; Asst. Dir., 4–H Youth Programs (1995). BS 1978, U. of Arizona; MA 1985, New Mexico St. U.; PhD, 1988, Ohio St. U.

GERHARDT, PATRICIA A., Co. Ext. Agent, Cloud Co., Concordia (1988). BS 1978, Kansas St. U.

GERMANN, RALPH N., Farm Management Association Fieldman Emeritus (1956). BS 1951, MS 1957, Kansas St. U.

GERRITZ, ELLSWORTH M., Dean/Prof. Emeritus, Admissions and Records (1954). BE 1937, St. Cloud St. Teachers Col.; MA 1948, PhD 1951, U. of Minnesota.

GEYER, KATHERINE, Prof. Emerita of Physical Education, Dance, and Leisure Studies (1927). BS 1927, Ohio St. U.; MA 1934, Columbia U. (*)

GEYER, WAYNE A., Prof. of Forestry; Research Forester, Ecology Silviculture, Agr. Exp. Sta. (1966). BS 1955, Iowa St. U.; MS 1962, Purdue U.; PhD 1971, U. of Minnesota. (*)

GIBBONS, JACQUE E., Assoc. Prof. of Social Work (1982). BA 1968, U. of Kansas; MSW 1973, PhD 1981, Washington U.–St. Louis. (*)

GIBBS, MARY LOU, Co. Ext. Agent Emerita, Family and Consumer Sciences, Pottawatomie Co., Westmoreland (1972). BS 1952, Kansas St. U.

GILL, BIKRAM S., Univ. Distinguished Prof. of Plant Pathology, Research Cytogeneticist, Agr. Exp. Sta. (1979). BS 1966, MS 1966, Punjab U., India; PhD 1973, U. of California. (*)

GILL, DEBORAH, Admissions Representative (1995). BS 1995, Kansas St. U.

GILLESPIE, JERRY R., Prof. and Dir. of Food Animal Health and Management Cntr. (1985). DVM 1961, Oklahoma St. U.; PhD 1965, U. of California; Diplomate 1975, American Col. of Vet. Anesthesiologists. (*)

GILLESPIE, VINCENT E., Assoc. Prof. Emeritus of English (1966). BA 1952, Sterling Col.; MA 1956, PhD 1970, U. of Kansas.

GIPSON, PHILIP S., Adjunct Assoc. Prof. of Biology; Research Leader, Kansas Cooperative FIsh and Wildlife (1993). BS 1964, U. of Central Arkansas; MS 1967, PhD 1971, U. of Arkansas. (*)

GLASGOW, LARRY A., Prof. of Chemical Engineering (1978). BS 1972, MS 1974, PhD 1977, U. of Missouri at Columbia. (*)

GLEASON, JENNIFER V., Co. Ext. Agent, Family and Consumer Sciences, Edwards Co., Kinsley (1993). BS 1991, MS 1993, Kansas St. U.

GLENN, ESTHER BEACHEL, Asst. Prof. Emerita of English (1948). AB 1930, Kansas Wesleyan U.; MS 1938, Kansas St. U. (*)

GLENN, MARILYN S., Co. Ext. Agent, Family and Consumer Sciences and 4–H, Kingman Co., Kingman (1971). BS 1968, Kansas St. U.

GLYMOUR, BRUCE D., Asst. Prof. of Philosophy (1995). BA 1990, C. Philo 1993, U. of California at San Diego; PhD 1995, U. California at San Diego.

GODDARD, JAMES F., Assoc. Prof. of Architectural Engineering and Construction Science (1972). BSBC 1969, Kansas St. U.; MS 1972, U. of Florida.

GOE, W. RICHARD, Asst. Prof. of Sociology (1991). BA 1979, MA 1981, Marshall U.; PhD 1988, Ohio St. U. (*)

GOERING, BRADLEY P., Co. Ext. Agent, Ag, Kearny Co., Lakin (1996). BS 1989, U. of Wyoming; MS 1993, Kansas St. U.

GOERTZ, HARVEY E., Asst. Prof. Emeritus; Area Ext. Specialist, 4–H Youth (1937). BS 1937, Kansas St. U.; MS 1963, Colorado St. U.

GOLD, GARRETT L., Co. Ext. Agent, Agr., Stevens Co., Hugoton (1973). BS 1973, Kansas St. U.

GOLD, LEONARD M., Head of Engineering Tech. (1996). BS 1962, MS 1964, PhD 1969, Drexel Inst. of Tech.

GOLLADAY, RICHARD E., Co. Ext. Agent Emeritus, Agr., Osborne Co., Osborne (1979). BS 1952, Kansas St. U.

GOOD, DON L., Prof. Emeritus, Head of Animal Sciences and Industry (1947). BS 1947, Ohio St. U.; MS 1950, Kansas St. U.; PhD 1956, U. of Minnesota. (*)

GOODBAND, ROBERT D., Assoc. Prof. of Animal Sciences and Industry; Ext. Specialist, Swine (1989). BS 1984, Pennsylvania St. U.; MS 1986, PhD 1989, Kansas St. U. (*)

GOODENOW, PHILIP E., Asst. Instr. Emeritus, Education (1967). BA 1953, Kansas Wesleyan.

GOODHEART, CLARENE L., Co. Ext. Agent Emerita, Family and Consumer Sciences, Rooks Co., Stockton (1974). BS 1961, Fort Hays St. U.

GOODIN, DOUGLAS G., Asst. Prof. of Geography. BA 1986, U. of Northern Colorado; MA 1989, U. of Illinois; PhD 1993, Univ. of Nebraska–Lincoln. (*)

GOODIN, KATHY R., Co. Ext. Agent, Family and Consumer Sciences, Marion Co., Marion (1984). BS 1982, MS 1991, Kansas St. U.

GOODMAN, ALLAN P., Asst. Prof. of Architectural Engineering (1977). BArch 1967, MArch 1988, Kansas St. U.; Registered Architect, Kansas, 1970.

GOODSON, F. TODD, Asst. Prof. of Education (1997). BS 1980, U. of Missouri; MS 1983, Northwest Missouri St. U.; PhD 1993, U. of Missouri.

GOODWIN, BARRY K., Assoc. Prof. of Ag. Economics, Demand/Trade, Trade, Advance Demand (1988). BS 1982, Troy St. U.; MS 1984, Mississippi St. U; PhD 1988, N. Carolina St. U. (*)

GORDER, PETER, Assoc. Prof. of Mechanical and Nuclear Engineering (1993). BS 1986, MS 1988, PhD 1993, U. of California–Davis. (*)

GORDON, SCOTT C., Co. Ext. Agent, Agr., Allen Co., Iola (1989). BS 1987, Kansas St. U.

GORDON, W. BARNEY, Assoc. Prof. of Agronomy; Research Agronomist in Charge, Irrigation Experimental Field–Scandia, Agr. Exp. Sta. (1990). BS 1973, Mississippi St. U.; MS 1985, Auburn U.; PhD 1990, S. Dakota St. U. (*)

GORMELY, PATRICK JOSEPH, Assoc. Prof. of Economics (1967). AB 1963, Catholic U. of America; PhD 1967, Duke U. (*)

GORMELY, SUSAN, Arts and Sciences Advisor (1988). BSN 1964, Catholic U. of America; MS 1989, Kansas St. U.

GORTON, ROBERT LESTER, Prof. Emeritus of Mechanical and Nuclear Engineering; Assoc., Inst. for Environmental Research (1960). BS 1953, Louisiana Polytechnic Inst.; MS 1960, Louisiana St. U.; PhD 1966, Kansas St. U.; Professional Engineer, 1953. (*)

GOTTSCH, A. HAROLD, Co. Ext. Dir. Emeritus, Reno Co., Hutchinson (1954). BS 1953, Oklahoma St. U.; MS 1962, Kansas St. U.

GOULD, REBECCA A., Assoc. Prof. of Hotel, Restaurant, Institution Management and Dietetics (1992). BS 1977, Sam Houston St. U., MS 1982, PhD. 1986, Texas Women's U. (*)

GOULDEN, NANCY, Assoc. Prof. of Speech (1985). BS 1957, Kansas Teacher's Col.; MA 1981, Villanova U.; EdD 1989, N. Arizona U. (*)

GOWDY, KENNETH K., Assoc. Dean Emeritus of Engineering and Prof. of Mechanical and Nuclear Engineering (1957). BS 1955, MS 1961, Kansas St. U.; PhD 1965, Oklahoma St. U.; Professional Engineer. (*)

GRABER, DEBRA T., Co. Ext. Dir., Hort., Reno Co., Hutchinson (1989). BS 1981, MS 1985, Kansas St. U.

GRABER, RONALD W., Co. Ext. Agent, Agr., Harvey Co., Newton (1986). BS 1982, MS 1985, Kansas St. U.

GRAHAM, JOHN, Prof. of Finance (1970). BA 1967, Kansas St. U.; MBA 1968, PhD 1970, U. of Arkansas. (*)

GRAHAM, RALF O., Prof. Emeritus, Communications (1961). BA 1948, Peru St. Teachers Col., Nebraska; MS 1955.

GRAHAM, STEVEN M., Asst. to the Dean and Dir., Col. of Agr., Ag. Expt. Sta., and Coop. Ext. Serv. (1995). BS 1973, Western Illinois U.; MS 1981, Kansas St.U.

GRAHAM, TREVOR, Asst. Athletic Trainer (1997). BS 1988, Chapman Col.; MS 1991, U. of Oregon.

GRAHAM, WILLIAM, Asst. Athletic Trainer (1997). BS 1988, Chapman Col.; MS 1991, U. of Oregon.

GRAME, ROBERT E., Asst. Prof. of Art (1997). BFA 1992, Kansas St. U.; MFA 1996, Kansas St. U. (*)

GRANT, STANLEY C., Adjunct Prof. of Civil Engg. (1991). BA 1953, Coe Col.; MA 1955, U. of Wyoming; PhD 1971, U. of Idaho.

GRAVES, HARRIET, Assoc. Prof. of Clinical Sciences (1992). DVM 1985, MS 1990, Michigan St. U.; Diplomate 1991, Amer. Col. of Vet. Ophthal. (*)

GRAVES, O. FINLEY, Prof. and Head of Accounting (1997). BA 1966, U. of Mississippi; MA 1970, Rice U.; PhD. 1975, U. of North Carolina at Chapel Hill; MA 1979, PhD 1985, U. of Alabama; CPA 1983, Mississippi. (*)

GRAY, ANDREW P., Assoc. Prof. Emeritus, Diagnostic Lab; Research Pathologist (1964). DVM 1953, MS 1963, PhD 1966, Kansas St. U.

GRAY, MARION WILSON, JR., Prof. of History (1969). BA 1964, Texas Christian U.; MA 1966, PhD 1971, U. of Wisconsin. (*)

GRAY, THOMAS J., Prof. of Physics (1977). BS 1960, MS 1962, North Texas St. U.; PhD 1967, Florida St. U. (*)

GREEN, BRIDGET L., Assoc. Dir. of Affirmative Action (1997). BA 1989, Claflin Col.; JD 1993, Washburn School of Law; MBA 1998, MidAmerica Nazarene U.

GREENE, KATHLEEN V., Dir., Educational Supportive Services, McNair Scholar (1989). BA 1968, Ottawa U.; BS 1971, U. of Kansas; MS 1977, Kansas St. U.

GREENE, LAURENZ S., Farm Management Assoc. Fieldman Emeritus (1952). BS 1950, Kansas St. U.

GREIG, BETTY S., Adjunct Asst. Prof. of Hotel, Restaurant, Institution Management and Dietetics (1989). BS 1948, U. of Arkansas; MS 1968, Kansas St. U.

GREIG, JAMES K., JR., Prof. Emeritus of Hort.; Research Horticulturist, Vegetable Crops, Agr. Exp. Sta. (1952). BS 1949, MS 1950, U. of Arkansas; PhD 1960, Kansas St. U. (*)

GRICE, RONNIE, Dir., Police (1994). BA 1979, U. of Arkansas at Pine Bluff.

GRIEGER, DAVID M., Assoc. Prof. of Animal Sciences and Industry; Beef Cattle Reproduction/Molecular-Cellular Physiologist (1992). BS 1981, MS 1984, Purdue; PhD 1989, Washington St. U. (*)

GRIFFIN, CHARLES, Assoc. Prof. of Speech (1984). BA 1975, Northwestern U.; MA 1980, PhD 1983, U. of Missouri. (*)

GRIFFIN, DAVID, Asst. Prof. of Education (1992). BS 1968, Lane College; MS 1972, Central Missouri St. U.; EdS 1981, U. of Missouri at Kansas City; EdD 1994, Kanas St. U.

GRIFFITH, BEN, Asst. Football Coach (1990). MS 1973, Tennessee Tech U.

GRIFFITH, LESTER E., Co. Ext. Agricultural Agent Emeritus, Marion Co., Marion (1949). BS 1949, Kansas St. U.

GRIFFITH, MARY EVAN, Assoc. Prof., Education (1969). BS 1950, Kansas St. U.; MS 1957, Iowa St. U.; PhD 1966, Ohio St. U. (*)

GRIFFITT, WILLIAM B., Prof. of Psychology (1968). BA 1964, Kansas St. U.; PhD 1967, U. of Texas. (*)

GRIMES, TOM, Assoc. Prof. of Journalism and Mass Communications (1991). BA 1973, U. of Arkansas; MS 1974, Columbia U.; PhD 1986, Indiana U. (*)

GRINDELL, ROBERT M., Assoc. Prof. Emeritus of English (1972). AB 1956, Harvard U.; MA 1964, New York U.; PhD 1972, U. of Arizona. (*)

GRONQUIST, DAVID, Dir. of Facilities (1985). BS 1971, Emporia St. U.

GROSH, DORIS L., Prof. Emeritus of Industrial and Manufacturing Systems Engineering; Joint Appt. Statistics (1965). BS 1946, U. of Chicago; MS 1949, PhD 1969, Kansas St. U. (*)

GROSH, LOUIS E., JR., Assoc. Prof. Emeritus of Industrial and Manufacturing Systems Engineering (1965). BS 1944, Louisiana St. U.; BS 1947, MS 1949, PhD 1954, Purdue U. (*)

GROSS, CRAIG E., Co. Ext. Agent, Ag, Meade Co., Meade (1997). BS 1995, Kansas St. U.

GROSS, WILLIAM R., Prof. of Aviation and Chief Pilot (1987). BS 1970, MS 1973, Kansas St. U.; All flight ratings, airplane and helicopter.

GROVE, JEFF, Asst. Volleyball Coach (1997). BS 1991, Azusa Pacific U.

GRUENBACHER, DON M., Asst. Prof. of Electrical and Computer Engineering (1997). BS 1989; MS 1991; PhD 1994, Kansas St. U.

GRUNEWALD, KATHARINE K., Prof. of Foods and Nutrition; Agr. Exp. Sta. (1979). BS 1974, U. of Wisconsin; MS 1976, PhD 1979, U. of Kentucky. (*)

GRUNEWALD, ORLEN C., Prof. of Agricultural Economics, Marketing (1979). BA 1973, U. of Wisconsin, Green Bay; MS 1975, PhD 1980, U. of Kentucky. (*)

GUENTHER, BRADLEY L., Computer Info. Specialist, Electrical and Computer Engineering (1997). BS 1996, Kansas St. U.

GUFFY, MARK M., Prof. Emeritus of Radiology (1963). DVM 1949, MS 1966, Colorado St. Univ; Diplomate 1968, American Col. of Vet. Radiology. (*)

GUGLE, TERRY L., Special Asst., Animal Sciences and Industry (1974). BS 1971, Kansas St. U.

GUIKEMA, JAMES A., Prof. of Biology; Plant Physiologist, Agr. Exp. Sta.; Assoc. Dir. of Operations (1981). BA 1973, Calvin Col.; PhD 1978, U. of Michigan. (*)

GUSTAFSON, DAVID A., Prof. of Computing and Information Sciences (1977). B. Math 1967, U. of Minnesota; BS 1969, U. of Utah; MS 1973, PhD 1979, U. of Wisconsin. (*)

GUSTAFSON, MERLIN DeWAYNE, Assoc. Prof. Emeritus of Political Science (1960). BS 1943, MS 1947, Kansas St. U.; PhD 1956, U. of Nebraska. (*)

GUY CHRISTOPHER, Asst. Prof. of Biology (1994). BS 1987, U. of Missouri–Columbia; MS 1990, Ph.D. 1993, South Dakota St. U. (*)

GWIRTZ, JEFFREY A., Instr. of Grain Science and Industry (1989). BS 1979, MS 1992, Kansas St. U.

HAAG, MARY L., Instr., English Language Program (1991). BA 1974, Kent State U.; MA 1986, U. of Kansas.

HACKLER, RAYMOND F., Farm Management Assoc. Fieldman Emeritus (1960). BS 1952, MS 1966, Oklahoma St. U.

HADDOCK, MICHAEL J., Assoc. Prof. and Science Reference, KSU Libraries (1989). BA 1977, Kansas St. U.; MLS 1988, Emporia St. U.

HADJISTAMOULOU, CHRYSOSTOMOS, Research Assoc. of Physics (1985). BS 1983, U. of Colorado; MS 1985, U. of Manitoba.

HADLE, FRED B., Asst. Prof. Emeritus of Hort. (1951). MS 1958, Kansas St. U.

HAFLING, MICHAEL N., Instr. of Architectural Engineering and Construction Science (1997). BS 1977, Kansas St. U.

HAFT, EVERETT EUGENE, Prof. Emeritus of Electrical and Computer Engineering (1961). BS 1947, MS 1951, PhD 1955, U. of Wisconsin; Professional Engineer in Wisconsin, 1952. (*)

HAGAN, PATRICIA W., Instr. Emerita of Art (1971). BS 1970, Kansas St. U.

HAGEMAN, CHARLES A., Farm Management Assoc. Fieldman Emeritus (1936). BS 1936, Kansas St. U.

HAGEN, LAWRENCE J., Adjunct Asst. Prof. of Agronomy; Research Agricultural Engineer, Wind Erosion Research Unit, USDA, ARS (1967). BS 1962, MS 1967, N. Dakota St. U.; PhD 1980, Kansas St. U. (*)

HAGMANN, CONSTANZA, Assoc. Prof. of Management (1976). BS 1975, U. of Oregon; MBA 1976, MS 1984, PhD 1988, Kansas St. U. (*)

HAGMANN, SIEGBERT, Prof. of Physics (1980). MA 1973, U. of Munster; PhD 1977, U. of Cologne. (*)

HAGSTRUM, DAVID W., Adjunct Assoc. Prof. of Entomology, USDA Grain Marketing Research Cntr. (1983). BS 1965, PhD 1970, U. of California, Riverside. (*)

HAGUE, JAMES R., Prof. of Architectural Engg. and Construction Science (1988). BS 1977, MS 1984, U. of Kansas.

HAHN, RICHARD R., Prof. Emeritus of Grain Science and Industry (1992). PhD 1957, Kansas St. U.

HAJDA, JOSEPH, Prof. Emeritus of Political Science (1957). BA 1951, MA 1952, Miami U.; PhD 1955, Indiana U. (*)

HALAZON, GEORGE C., Assoc. Prof. Emeritus; Ext. Specialist, Wildlife and Outdoor Recreation (1954). PhB 1943, MS 1950, U. of Wisconsin.

HALE, BYRON W., Co. Ext. Agent, Agr., Decatur Co., Oberlin (1989). BS 1987, Panhandle St. U.

HALE, JENNIFER J., Head Women's Crew Coach (1996). BA 1985, Harvard U.

HALL, CHARLES T., Co. Ext. Agricultural Agent Emeritus, Johnson Co., Olathe (1934). BS 1932, Kansas St. U.

HALL, DEAN G., Assoc. Prof. of English (1983). BA 1968, MA 1970, U. of Northern Iowa; PhD 1977, Kent St. U. (*)

HALL, LAWRENCE FENOR, Assoc. Prof. Emeritus of Education (1926). BS 1923, MS 1927, Kansas St. U. (*)

HALLAUER, DAVID G., Co. Ext. Agent, Ag, Neosho Co., Erie (1997). BS 1996, Kansas St. U.

HAM, GEORGE E., Prof.; Assoc. Dean of Agr., Assoc. Dir. of Agr. Exp. Sta. (1980). BS 1961, MS 1963, PhD 1967, Iowa St. U. (*)

HAM, JAY M., Assoc. Prof. of Agronomy (1990). BS 1984, Kansas St. U.; MS 1986, Oklahoma St. U.; PhD 1989, Texas A&M. (*)

HAMILTON, DELILIAH E., Asst. Instr., Libraries (1991). BA 1990, Kansas St. U.

HAMILTON, JAMES R., Assoc. Prof. and Head of Philosophy (1971). BA 1964, Pfeiffer Col.; MA 1967, Emory U.; MDiv 1968, Union Theological Seminary; PhD 1974, U. of Texas at Austin. (*)

HAMILTON, STEPHEN, Asst. Prof. of Agricultural Economics; Natural Resources (1996). BA 1991, MS 1994, PhD 1996, U. California–Berkeley.

HAMMAKER, ROBERT M., Prof. of Chemistry (1961). BS 1956, Trinity Col.; PhD 1960, Northwestern U. (*)

HAMMEL, MARY L., Instr. and Dir. of Media Services, Education (1981). BFA 1980, Kansas St. U.

HAMMER, LYLE M., Co. Ext. Agent, Ag, Logan Co., Oakley (1996). BS 1990, Kansas St. U.

HAMSCHER, ALBERT N. III, Prof. of History (1972). BA 1968, Pennsylvania St. U.; MA 1970, PhD 1973, Emory U. (*)

HANCOCK, JOE D., Assoc. Prof. of Animal Sciences and Industry (1988). BS 1978, MS 1983, Texas Tech.; PhD 1987, U. of Nebraska. (*)

HANCOCK, MARJORIE R., Assoc. Prof. of Education (1991). BS 1969, MS1974, EdD 1991, Northern Illinois U. (*)

HANKLEY, WILLIAM JOHN, Prof. of Computing and Information Sciences (1972). BSEE 1962, MS 1964, Northwestern U.; PhD 1967, Ohio St. U. (*)

HANNA, GERALD, Prof., Education (1967). AB 1956, MA 1959, Long Beach St. Col.; EdD 1965, U. of Southern California. (*)

HANSEN, CARL ULLMAN, Asst. Prof. Emeritus of Industrial and Manufacturing Systems Engineering (1957). BS 1936, Kansas St. U.; MS 1961, U. of Nebraska; Professional Engineer, 1961.

HANSEN, MERLE FREDRICK, Prof. Emeritus of Biology; Parasitologist, Agr. Exp. Sta. (1950). AB 1939, MA 1941, U. of Minnesota; PhD 1948, U. of Nebraska. (*)

HANSEN, SUSAN, Asst. Dir. of New Student Services (1996). BA 1987, U. of Wisconsin–Eau Claire; MS 1991, U. of Wisconsin–LaCrosse.

HANSON, JILL T., Co. Ext. Agent, Family and Consumer Sciences and 4–H, Ellsworth Co., Ellsworth (1989). BS 1989, N. Dakota St. U.

HAQUE, EKRAMUL, Assoc. Prof. of Grain Science and Industry; Grain Processing Tech. Scientist (1987). BS 1964, Bangladesh U. of Engineering and Tech.; MS 1969, Purdue U.; PhD 1978, Kansas St. U. (*)

HARBERS, CAROLE ANN ZIMMERMAN, Assoc. Prof. of Foods and Nutrition; Agr. Exp. Sta. (1979). BS 1969, Ohio U.; MS 1976, Virginia Poly. Inst. and St. U.; PhD 1979, Kansas St. U. (*)

HARBERS, LENIEL H., Prof. of Animal Sciences and Industry; Animal Research Nutritionist, Agr. Exp. Sta. (1964). BS 1957, MS 1958, Texas A&M; PhD 1961, Oklahoma St. U. (*)

HARBSTREIT, STEVEN R., Assoc. Prof. of Education (1987). BS 1971, U. of Missouri–Columbia; MEd 1976, Northwest Missouri St. U.; PhD 1987, U. of Missouri–Columbia. (*)

HARGROVE, WILLIAM L., Dir., Kansas Center for Ag Resources and the Environment (1997). BS 1975, Baylor U.; MS 1977, Texas A&M U.; PhD 1980, U. of Kentucky. (*)

HARKIN, KENNETH R., Asst. Prof., Clinical Sci. (1997). DVM 1989, Iowa St. U.

HARMS, CRAIG A., Asst. Prof. of Kinesiology (1997). BS 1979, Nebraska Wesleyan U.; MS 1990, Colorado St. U.; PhD 1994, Indiana U.

HARNER, JOSEPH P., III, Prof. of Biological and Agricultural Engineering; Agricultural Engineer (1983). BS 1979, MS 1981, PhD 1983, Virginia Poly. Inst. and St. U.; Professional Engineer, 1983. (*)

HARNETT, R. MICHAEL, Prof. of Industrial and Manufacturing Systems Engineering (1988). BS 1968, Louisiana Poly. Inst.; MS 1972, PhD 1974, U. of Alabama. (*)

HARPER, ERICK, Asst. Marketing Dir., Intercollegiate Athletics, (1992). BA 1992, Kansas St. U.

HARPER, ROBERT, Instr., Physical Education and Leisure Studies (1987). BS 1984, Kansas St. U.

HARPER, SKYLER, Asst. Dir., Housing and Dining Services (1995). BArch 1982, Kansas St. U.; Registered Architect.

HARR, SHERRY J., Asst. Prof. of Clothing, Textiles, and Interior Design (1998). BS 1987, MS 1994, U. of Nebraska–Lincoln; PhD 1998, Virginia Polytechnic Inst. and St. U.

HARRINGTON, JOHN A., JR., Prof. of Geography (1994). BS 1972, Michigan St. U.; MA 1974, U. of Minnesota; PhD 1980, Michigan St. U. (*)

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HARRIS, RICHARD J., Prof. of Psychology (1974). BA 1968, Col. of Wooster; MA 1971, PhD 1974, U. of Illinois. (*)

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HARTMAN, AMY L., Electronic Document Librarian, Communications (1996). BS 1978, MBA 1982, U. of Michigan; MLIS 1995, U. of Texas.

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HASASI, KADOSA, Asst. Prof. of Mathematics (1986). BA 1971, MA 1976, PhD 1983, U. of Colorado.

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HAUSE, NANCY, Asst. Prof. Emerita of Journalism and Mass Communications (1983). AB 1953, U. of Colorado; MS 1982, Kansas St. U.

HAUSE, RICHARD G., Prof. Emeritus of Education (1966). AB 1954, MA 1955, Colorado St. Col.; EdD 1966, U. of Colorado. (*)

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HOSIE, DARREL D., Co. Ext. Agent, Cloud Co., Concordia (1966). BS 1967, Kansas St. U.

HOSKINSON, JAMES J., Assoc. Prof. of Radiology (1991). BS 1982, 1984, DVM 1986, Washington St. U. Diplomate 1991, American Col. of Vet. Radiology. (*)

HOSNI, MOHAMMAD H., Assoc. Prof. of Mechanical and Nuclear Engineering; Dir., Inst. Environmental Research (1993). BS 1981, Southern U., Louisiana; MS 1984, Louisiana St. U.; PhD 1989, Mississippi St. U. (*)

HOSSAIN, ASM MUSTAQUE, Assoc. Prof. of Civil Engineering (1991). BS 1983, MS 1986, Bangladesh U. of Engineering and Tech.; PhD 1990, Arizona State U. (*)

HOUSER, VIRGINIA, Assoc. Prof. of Music (1989). BA 1977, Columbia Col.; MM 1985, DM 1992, U. of Oklahoma. (*)

HOUSH, GERALD, Asst. Dir. of Planned Giving, KSU Foundation (1991). BA 1956, Manhattan Christian College; MS 1960, Phillips U.; D Min 1975, San Francisco Theological Seminary.

HOWARD, JOHN, Administrator of International Grains Program, Grain Science and Industry (1997). BA 1973, Texas A&M U.

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JEPSEN, RICHARD LOUIS, Prof. Emeritus of Agricultural Engineering; Ext. Specialist, Farm and Community Safety (1963). BS 1950, MS 1963, Kansas St. U.; EEd 1974, North Carolina St. U.

JIANG, HONGXING, Prof. of Physics (1988). BS 1981, Fudan U., China; MS 1983, PhD 1986, Syracuse U. (*)

JIANG, SHAOYI, Asst. Prof. of Chemical Engineering (1997). BS, Hua Qjao U.; MS Nanjing Inst. of Chem. Tech.; PhD 1993, Cornell U.

JOHNSON, ANGIE, Asst. Marketing Dir., Intercollegiate Athletics (1992). BS 1990, MBA 1992, Kansas St. U.

JOHNSON, ARTHUR R., Co. Ext. Agent, Jefferson Co., Oskaloosa (1958). BS 1958, Kansas St. U.

JOHNSON, BETTY, Constit. Dev. Officer, KSU Foundation (1989). BA 1980, Fort Hays St. U.

JOHNSON, BRUCE, Asst. Prof. of Arch. (1995). BArch 1991, Kansas St. U.; MS 1995, Columbia U.

JOHNSON, DALLAS E., Prof. and Head of Statistics (1975). BS 1960, Kearney St. Col.; MA 1966, Western Michigan U.; PhD 1970, Colorado St. U. (*)

JOHNSON, GARY LEE, Prof. Emeritus of Electrical and Computer Engineering (1966). BS 1961, MS 1963, Kansas St. U.; PhD 1966, Oklahoma St. U.; Professional Engineer, 1973. (*)

JOHNSON, GEORGE DANA, Assoc. Prof. Emeritus of Chemistry (1952). AB 1940, MA 1941, Oberlin Col.; PhD 1946, U. of Michigan. (*)

JOHNSON, JILINDA A., Medical Technologist, Lafene Health Ctr. (1985). BS 1966, Kansas St. U.

JOHNSON, JOAN (JODY) E., Asst. Dean of Veterinary Medicine (1995). DVM 1976, MS 1977, PhD 1985, Kansas State U.

JOHNSON, JOHN L., Assoc. Prof., Government Publications, KSU Libraries (1969). BA 1967, MA 1973, Kansas St. U.

JOHNSON, JUANITA B., Co. Ext. Agent Emerita, Family and Consumer Sciences, Crawford Co., Girard (1948). BS 1945, Kansas St. U.

JOHNSON, LINDA M., Instr., Dir. of Inst. Tech. Center, Vet. Medicine (1970). BS 1969, Ohio U.; MS 1978, PhD 1990, Kansas St. U.

JOHNSON, LORETTA C., Asst. Prof. of Biology (1995). BA 1979, Conneticut Col.; PhD 1992, U. of Conneticut. (*)

JOHNSON, LOWELL B., Prof. of Plant Pathology; Research Plant Disease Physiologist, Agr. Exp. Sta. (1968). BS 1957, U. of Illinois; MS 1962, PhD 1964, Purdue U. (*)

JOHNSON, MARC A., Dean of Agriculture and Dir. of Ag. Experiment Station and Coop. Ext. Services; Prof. of Ag. Economics (1985). BA 1970, Emporia St. U.; MA 1973, PhD 1975, Michigan St. U. (*)

JOHNSON, ROBERT E., Prof. Emeritus of Physical Education and Leisure Studies (1977). BA 1951, Transylvania U.; MA 1969, Georgetown U.; PhD 1975, Ohio U. (*)

JOHNSON, ROBERT L., Prof. Emeritus; Ext. Specialist, Program and Staff Dev. (1965). BS 1951, U. of Nebraska; MS 1956, PhD 1958, U. of Wisconsin. (*)

JOHNSON, ROGER T., Instr. of Grain Science and Industry (1986). BS 1960, Oberlin Col.; MS 1962, PhD 1967, U. of Wisconsin.

JOHNSON, RONALD E., Dir., Student Publications; Asst. Prof. of Journalism and Mass Communications (1989). BA 1981, Fort Hays St. U.; MS 1982, U. of Kansas.

JOHNSON, TERRY C., Distinguished Prof. of Biology (1977). BS 1958, Hamline U.; MS 1961, PhD 1964, U. of Minnesota. (*)

JOHNSON, THOMAS R., Research Asst. of Entomology (1984). BS 1984, Kansas St. U.

JOHNSON, WILLIAM H., Prof. Emeritus, Biological and Agricultural Engineering (1970). BS Agr., BS Agricultural Engineering 1948, MS 1953, Ohio St. U.; PhD 1960, Michigan St. U.; Professional Engineer in Ohio, 1970. (*)

JOINER, CHRISTOPHER, Asst. Prof. of Marketing and International Business (1997). BA 1988, Duke U.; MBA 1992, Wake Forest U.; PhD 1997, U. of Minnesota.

JONES, ANGELA R., Asst. Prof., Science Cataloger, KSU Libraries (1993). MS 1990, U. of North Texas; BA 1986, U. of Texas.

JONES, BYRON WAYNE, Assoc. Dean for Research and Graduate Programs and Dir., Engg. Exp. Station; Prof. of Mechanical and Nuclear Engineering (1978). BS 1971, Kansas St. U.; MS 1973, PhD 1975, Oklahoma St. U.; Professional Engineer, 1977. (*)

JONES, CARLA E., Assoc. Dean of Students (1994). BS 1977, Jacksonville U.; MS 1978, Florida St. U.; PhD 1992, U. of Florida.

JONES, C. CLYDE, Prof. Emeritus of Management (1960). AB 1944, Marshall U.; MA 1950, PhD 1954, Northwestern U. (*)

JONES, DALE VINCENT, Assoc. Prof. Emeritus of English (1946). BS 1931, MS 1941, Kansas St. U. (*)

JONES, JAMES S., Assoc. Prof. of Arch. (1982). BBAdm 1965, U. of Puget Sound; MArch 1971, U. of Washington; Registered Architect.

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JORNS, WILLIAM J., Asst. Prof. Emeritus; Coord., Ext. Education (1971). BS 1954, MS 1961, Kansas St. U.; EdD 1971, North Carolina St. U.

JULIAN, ROBERT E., Prof. and Dir., Program Dev., International Trade Inst. (1988). BS 1955, Kansas St. U.; M.Ag.Ed. 1967, U. of Arizona; Ed.D 1976, Oklahoma St. U.

JURICH, ANTHONY P., Prof. of Family Studies and Human Services; Agr. Exp. Sta. (1972). BS 1969, Fordham U.; MS 1971, PhD 1972, Pennsylvania St. U. (*)

KAFF, MARILYN, Asst. Prof. of Education (1977). BS 1977, Washburn U.; MS 1982, Kansas St. U.; PhD 1977, U. of Kansas.

KAHRS, AMOS J., Instr. Emeritus of Animal Sciences and Industry; Poultry Research Farm Supt., Agr. Exp. Sta. (1956). BS 1953, Kansas St. U.

KAISER, HERBERT EMIL, Assoc. Prof. Emeritus of Education (1961). BS 1941, Concordia Teachers Col.; MS 1943, Oklahoma St. U.; PhD 1959, U. of Nebraska. (*)

KALITA, PRASANTA K., Asst. Prof. of Biological and Agricultural Engineering (1994). B. Tech 1982, Punjab Agricultural U., India; M.Eng 1986, Asian Institute of Tech., Thailand; PhD 1992, Iowa St. U. (*)

KAMERER, DAVID, Asst. Prof. of Journalism and Mass Communications (1994). BA 1978, U. of Iowa; MA 1983, Kansas State U.; PhD 1989, Indiana U. (*)

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KANE, MARY, Instr., of Education (1988). BS 1983, MS 1986, Kansas St. U.

KANOST, MICHAEL, Assoc. Prof. of Biochemistry (1991). BS 1979, Colorado St. U.; PhD 1983, Purdue U. (*)

KAPIL, SANJAY, Asst. Prof. of Diagnostic Medicine/Pathobiology (1994). BVSc 1982, MVSc 1985, Haryana Agric. U., India; PhD 1991, U. of Minnesota. (*)

KAPITANSKI, LEV, Prof. of Mathematics (1993). PhD 1981, DSc 1991, Steklov Inst. of Mathematics. (*)

KARCHER, TRACY E., Co. Ext. Agent, Ag, Graham Co., Hill City (1997). BS 1996, NW Oklahoma St. U.

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KASSEBAUM, JENNIFER M., Senior Asst. U. Attorney (1992). BS 1985, U. of Kansas; JD 1989, U. of Kansas.

KASTENS, TERRY L., Asst. Prof. of Agricultural Economics; Ext. Agricultural Economist, Crop and Farm Management (1995). BA 1973, U. of Kansas; PhD 1995, Kansas St. U. (*)

KASTNER, CURTIS L., Prof. of Animal Sciences and Industry; Meat Research Scientist, Agr. Exp. Sta. (1975). BS 1967, MS 1969, PhD 1972, Oklahoma St. U. (*)

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KATZ, JEFFREY P., Asst. Prof. of Management (1995). MS 1979, Arizona St. U.; MA 1993, PhD 1995, U. of Florida. (*)

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KAYSER, JEAN-PATRICK R., Asst. Instr. of Animal Sciences and Industry; Equine Physiology (1993). MS 1991, Colorado St. U.

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KEATING, JAMES L., Prof. of Civil Engineering Tech. (1993). BS 1972, So. Illinois; MS 1973, Cleveland St. U.; PhD 1993, U. of Alabama; Professional Engineer.

KEELER, GARRY L., Co. Ext. Dir., Douglas Co., Lawrence (1967). BS 1966, MS 1993, Kansas St. U.

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KEEN, RAY A., Prof. Emeritus of Hort. (1947). BS 1942, Kansas St. U.; MS 1947, PhD 1956, Ohio St. U. (*)

KEETON, KERRY S., Prof. of Clinical Pathology; Research Clinical Pathologist (1977). Diplomate 1965, American Col. of Vet. Pathologists; BS 1965, DVM 1966, Texas A&M; PhD 1971, U. of California. (*)

KEHLER, DAVID E., Co. Ext. Agent, Ag., Butler Co., El Dorado (1976). BS 1975, Kansas St. U.

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KELLER–McNULTY, SALLIE K., Prof. of Statistics (1985). BA 1977, MA 1979, U. of South Florida; PhD 1983, Iowa St. U.

KELLET, CAROL E., Dean of Human Ecology, Prof. of Family Studies and Human Services (1998). BS 1969, Kansas St. U.; MEd 1975, PhD 1980, U. of Missouri–Columbia.

KELLEY, KENNETH W., Assoc. Prof.; Crops and Soils Research Scientist, SE Kansas Agr. Res. Cntr. (1975). BS 1967, MS 1973, Kansas St. U.

KELLEY, PAUL LEO, Prof. Emeritus, Agricultural Economics; Research Economist, Agr. Exp. Sta. (1943). BS 1943, MS 1946, Kansas St. U.; PhD 1956, Iowa St. U. (*)

KELLEY, TERRYL D., Instr. and Section Head of Avionics and Aviation Maintenance Tech. (1983). AT 1971, Kansas Tech. Inst.; A&P certificate, AA 1968, Cloud County Comm. Col.; BS 1992, Pittsburg St. U.

KELLSTROM, MARTHA, Asst. Prof. of Education (1987). BS 1953, MS 1983, PhD 1985, Kansas St. U.

KEMP, KENNETH E., Prof. of Statistics; Consultant, Agr. Exp. Sta. (1968). BS 1963, MS 1965, PhD 1967, Michigan St. U. (*)

KENNEDY, CARROLL E., Prof. Emerita of Human Dev. and Family Studies; Agr. Exp. Sta. (1970). AB 1949, Wheaton Col.; MS 1953, Kansas St. U.; EdD 1963, U. of Maryland. (*)

KENNEDY, FAYE L., Coord. of Microcomputing Systems, Computing and Telecommunications Activities (1985). BS 1969, MS 1982, Kansas St. U.

KENNEDY, GEORGE A., Prof. of Veterinary Diagnostic Pathology, Dept. of Veterinary Diagnosis; Research Pathologist (1970). DVM 1967, Washington St. U.; PhD 1975, Kansas St. U.; Diplomate 1976, American Col. of Vet. Pathologists. (*)

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KENNEY, MICHAEL J., Assoc. Prof. Physiology (1992). BA 1981, Luther Co.; PhD 1988, U. of Iowa. (*)

KENT, NANCY JO, Co. Ext. Agent, Family and Consumer Sciences, Ford Co., Dodge City (1959). BS 1959, Fort Hays St. U.

KEPKA, GARY, Asst. Info. Tech. Spec., Communications (1994). BS 1994, Kansas St. U.

KEY, DAVID V., Co. Ext. Agent, Nemaha Co., Seneca (1988). BS 1986, MS 1987, Kansas St. U.

KEYS, SAMUEL R., Prof. Emeritus, Education (1969). AB 1948, Olivet Nazarene Col.; MA U. of Missouri–Kansas City; PhD 1959, U. of Minnesota. (*)

KHATAMIAN, HOUCHANG, Assoc. Prof. of Hort. (1977). BS 1965, Egean U.; MS 1971, PhD 1978, U. of Guelph. (*)

KIBBY, JIMMIE R., Co. Ext. Dir. Emeritus, Wyandotte Co., Kansas City (1966). BS 1965, MS 1966, Oklahoma St. U.

KIEFER, NANCY F., Arts and Sciences Advisor (1993). BA 1973, Washington U., St. Louis; MA 1983, Kansas St. U.

KIEFER, STEPHEN W., Prof. and Head of Psychology (1982). BA 1973, Washington U., St. Louis; MA 1975, PhD 1978, Arizona St. U. (*)

KILGORE, GARY L., Prof. of Agronomy, Ext. Specialist, Crops and Soils, Southeast (1972). BS 1964, MS 1966, Kansas St. U.

KILLIAN, ERIC S., Inst., Ext. Specialist, 4–H Youth Programs, Northeast (1997). BS 1992, Utah St. U.; MS 1994, Kansas St. U.

KIM, SUNG, Asst. Prof. of Management (1996). BS 1983, Creighton U.; MBA 1988, PhD. 1995, U. of Nebraska–Lincoln.

KIMMINS, R. KENT, Assoc. Prof. of Hort., Floriculture (1978). BS 1967, MS 1970, Texas A&M; PhD 1978, North Carolina St. U.

KINDLER, BEVERLY L., Co. Ext. Agent Emerita, Family and Consumer Sciences, Norton Co., Norton (1952). BS 1952, Kansas St. U.; MS 1967, Michigan St. U.

KING, CLAUDE L., Prof. Emeritus of Plant Pathology; Ext. Specialist, Plant Pathology (1934). BS 1932, MS 1953, Kansas St. U.

KING, DOUGLAS W., Dir. of Administrative Systems (1977). BS 1969, Kansas St. U.

KING, KATHLEEN, Adjunct Asst. Prof. of Art (1997). BA 1974, Iowa St. U.; MFA 1982, Louisiana St. U.

KING, TERRY S., Dean of Engineering; Prof. of Chemical Engineering (1997). BS 1975, Iowa St. U.; PhD 1979, Massachusetts Inst. of Tech.

KINSER, JAMES R., III, Producer/Dir., Kansas Regents Educational Communications Cntr. (1990). BS 1984, U. of Texas at Austin.

KINSLER, LESLIE A., Assoc. Prof. (1980). BA 1972, Emporia St. U.; MCS 1988, Wichita St. U.

KIRKHAM, MARY BETH, Prof. of Agronomy; Crops Research Physiologist, Agr. Exp. Sta. (1980). BA 1966, Wellesley Col.; MS 1969, PhD 1971, U. of Wisconsin. (*)

KIRMSER, PHILIP GEORGE, Prof. Emeritus of Mathematics and Engineering (1942). BS 1939, MS 1944, PhD 1958, U. of Minnesota; Professional Engineer, 1961. (*)

KISER, HARVEY L., Senior Agricultural Economist, Agricultural Economics (1979). BS 1959, MS 1963, PhD 1966, Ohio St. U.

KISSICK, BEVERLEE, Prof. and Dir. of Libraries (1987). BS 1959, MS 1981, PhD 1985, Kansas St. U.

KLAASSEN, HAROLD E., Assoc. Prof. of Biology; Ichthyologist, Agr. Exp. Sta. (1967). AB 1957, Tabor Col.; MS 1959, Kansas St. U.; PhD 1967, U. of Washington. (*)

KLABUNDE, KENNETH J., U. Distinguished Prof. of Chemistry (1979). BS 1965, Augustana Col.; PhD 1969, U. of Iowa. (*)

KLEINAU, JAMES L., Equipment Manager, Athletics (1979). BS 1977, Oklahoma St. U.

KLEMM, ROBERT D., Prof. Emeritus of Anatomy (1972). BS 1957, Capital U.; MS 1959, Ohio U.; PhD 1964, Southern Illinois U. (*)

KLOPFENSTEIN, CAROL F., Prof. of Grain Science and Industry, Research Cereal Chemist (1977). BS 1959, MS 1963, Pennsylvania St. U.; PhD 1978, Kansas St. U. (*)

KLUITENBERG, GERARD J., Assoc. Prof. of Agronomy (1989). BS 1982, MS 1984, U. of California–Davis; PhD 1989, Iowa St. U. (*)

KNACKENDOFFEL, ELIZABETH A., Asst. Prof., Education (1986). BS 1978, MS 1979, Emporia St. U.; PhD 1989, U. of Kansas.

KNAPP, ALAN, Assoc. Prof. of Biology; Plant Ecology, Agr. Exp. Sta. (1988). BS 1978, Idaho St. U.; MS 1981, PhD 1988, U. of Wyoming. (*)

KNAPP, MARY C., Assoc. State Climatologist Weather Data Librarian, Communications (1985). BVS 1977, Kansas St. U.

KNIGHT, DALE A., Assoc. Prof. Emeritus of Agricultural Economics; Research Agr. Econ., Regional and Community Dev., Agr. Exp. Sta. (1948). BS 1945, Kansas St. U.; MS 1946, Cornell U.; AM 1948, PhD 1952, U. of Chicago. (*)

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KNIGHT, PATRICK A., Assoc. Prof. of Psychology (1980). BS 1976, Michigan St. U.; MS 1979, PhD 1981, Purdue U. (*)

KNOSTMAN, HARRY DANIEL, Prof. Emeritus of Architectural Engineering and Construction Science (1957). BS 1955, MS 1961, Kansas St. U.; PhD 1966, U. of Colorado; Professional Engineer, 1959. (*)

KNOX, MATTHEW A., Assoc. Prof. of Arch. (1990). BArch 1987, Kansas St. U.; MArch 1990, U. of Virginia; Registered Architect.

KNUPFER, NANCY N., Assoc. Prof. of Education (1991). BS 1972, U. of Wisconsin–LaCrosse; MA 1984, PhD 1987, U. of Wisconsin–Madison. (*)

KNUPFER, PETER B., Assoc. Prof. of History (1991). BS 1975, MA 1982, PhD 1988, U. of Wisconsin–Madison. (*)

KOCH, BERL A., Prof. Emeritus of Animal Sciences and Industry (1956). BS 1949, Iowa St. U.; MS 1951, Cornell U.; PhD 1956, U. of California. (*)

KOEHLER, JOHN, Admin. Officer and Section Head of Professional Pilot, Col. of Tech. and Aviation (1995). BS 1974, U.S. Military Academy, West Point.

KOELLIKER, JAMES K., Prof. and Head, Biological and Agricultural Engg. (1973). BS 1967, Kansas St. U.; MS 1969, PhD 1972, Iowa St. U.; Professional Engineer, 1972. (*)

KOELTZOW, DONALD, Adj. Prof. of Grain Science and Industry (1997). PhD 1970, U. of Illinois.

KOEPSEL, WELLINGTON WESLEY, Prof. Emeritus of Electrical and Computer Engineering (1964). BS 1944, MS 1951, U. of Texas; PhD 1960, Oklahoma St. U.; Professional Engineer in Texas, 1952; Professional Engineer in Kansas, 1974. (*)

KOFOID, KENNETH D., Assoc. Prof., Sorghum Research, Agricultural Research Center–Hays (1986). BS 1973, Purdue U.; MS 1975, PhD 1979, U. of Nebraska. (*)

KOLONOSKY, PATRICIA A., Instr. of English (1983). BA 1963, Roberts Wesleyan Col.; MA 1977, Kansas St. U.

KOLONOSKY, WALTER F., Assoc. Prof. of Modern Languages (1973). BA 1963, Lycoming Col.; MA 1965, U. of Pennsylvania; PhD 1972, U. of Kansas. (*)

KONZ, STEPHAN ANTHONY, Prof. Emeritus of Industrial and Manufacturing Systems Engineering; Assoc., Inst. for Environmental Research (1964). BS 1956, MBA 1956, U. of Michigan; MS 1960, St. U. of Iowa; PhD 1964, U. of Illinois (*)

KOO, SUNG, Prof. of Foods and Nutrition (1990). BS 1970, Kon-Kuk U.; MS 1973, U. of New Hampshire; PhD 1976, Clemson U. (*)

KOPP, RICHARD F., Research Asst. of Forestry (1986). BS 1984, SUNY ESF; MS 1986, Pennsylvania St. U.

KORENEK, CAMILLE T., Dietitian, Housing and Dining Services (1989). BS 1987, U. of Southwest Louisiana; MA 1989, Texas A&M.

KOUDELE, JOSEPH WENDELL, Prof. Emeritus of Agricultural Economics; Research Agr. Econ., Consumption Economics and Marketing, Agr. Exp. Sta. (1947). BS 1943, U. of Nebraska; MS 1947, U. of Minnesota; PhD 1956, Michigan St. U. (*)

KOVAR, BRIAN R., Instr. of Management (1997). BA 1990, Washburn U.; MBA 1995, Oklahoma State U.

KOVAR, STACY E., Asst. Prof. of Accounting (1997). BA 1990, Washburn U.; MS 1992, PhD. 1996, Oklahoma St. U.; CPA 1990, Kansas.

KOWALIK, RANDALL, Asst., Communications (1995). BS 1991, U. of Texas.

KRAFT, SUSAN L., Assoc. Prof. of Radiology (1991). DVM 1985, PhD 1991, Washington St. U. Diplomate 1990, American Col. of Vet. Radiology. (*)

KRAINBILL, MILTON L., District Ext. Agent, Agr. and Community Dev., Post Rock Dist., Lincoln (1972). BS 1971, Kansas St. U.; MS 1992, Kansas St. U.

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KRAMER, CHARLES LAWRENCE, Prof. Emeritus of Biology; Mycologist, Agr. Exp. Sta.; Adjunct Prof. of Plant Pathology (1958). AB 1950, MA 1953, PhD 1957, U. of Kansas. (*)

KRAMER, KARL J., Prof. of Biochemistry; Research Chemist, Grain Marketing Research Cntr. (1974). BS 1964, Purdue U.; PhD 1971, U. of Arizona Adjunct appt. (*)

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KRAUSE, ROBERT S., VP for Institutional Advancement (1986), BS 1967, Western Illinois U.; MS 1968, Michigan St. U.

KRCHMA, LUDWIG J., Research Asst. of Entomology (1972). BS 1963, Rockhurst Col.; MS 1971, Kansas St. U.

KREGER, ROBERT, Staff Asst., Building Manager, KSU Libraries (1995). BA 1993, Emporia St. U.

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KREIKEMEIER, KELLY K., Assoc. Prof. Beef Research Scientist, Southwest Research–Ext. Center (1994). BS 1981, MS 1986, U. of Nebraska; PhD 1989, Kansas St. U.

KREISEL, PHYLLIS M., Co. Ext. Agent, 4–H, Cherokee Co., Columbus (1981). BS 1979, U. of Nebraska.

KREMER, EUGENE R., Prof. of Arch. (1973). BArch 1960, Rensselaer Polytechnic Inst.; MArch 1967, U. of California at Berkeley; Registered Architect. (*)

KREMER, S. LILLIAN, Assoc. Prof. of English (1987). BA 1959, SUNY at Albany; MA 1964, City U. of New York, PhD 1979, Kansas St. U. (*)

KREN, GEORGE M., Prof. of History (1965). BA 1948, Colby Col.; MA 1949, PhD 1960, U. of Wisconsin. (*)

KREN, MARGO, Prof. of Art (1971). BS 1966, U. of Wisconsin; MA 1969, Kansas St. U.; MFA 1979, U. of Iowa. (*)

KRIDER, ALDEN, Prof. Emeritus of Arch. (1949). BS in Arch. 1933, MS 1955, Kansas St. U.; Registered Architect. (*)

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KRISHNASWAMI, PRAKASH, Assoc. Prof. of Mechanical and Nuclear Engineering (1984). BS 1978, Indian Inst. of Tech., Madras; MS 1979, St. U. of New York; PhD 1983, U. of Iowa. (*)

KROMM, DAVID E., Prof. of Geography (1967). BS 1960, Eastern Michigan U.; MA 1964, PhD 1967, Michigan St. U. (*)

KROPF, DONALD HARRIS, Prof. of Animal Sciences and Industry; Meats Research Scientist, Agr. Exp. Sta. (1962). BS 1952, U. of Wisconsin; MS 1953, U. of Florida; PhD 1956, U. of Wisconsin (*)

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KRUMM, SUSAN J., Co. Ext. Agent, Family and Consumer Sciences, Douglas Co., Lawrence (1978). BS 1977, Kansas St. U.

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KUECK, DON L., Co. Ext. Dir. Emeritus, Agr., Reno Co., Hutchinson (1966). BS 1966, MS 1969, Kansas St. U.

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KUHL, GERRY, Prof. of Animal Sciences and Industry; Ext. Specialist, Beef Cattle Nutrition Management (1981). BS 1967, Michigan St. U.; MS 1971, PhD 1977, Cornell U.

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LADD, DALE L., Co. Ext. Agent, Agr. and Community Dev., McPherson Co., McPherson (1986). BS 1972, Kansas St. U.

LaFRANCE, DAVID G., Asst. Prof. of History (1985). BS 1971, Georgetown U.; MAT 1972, Colorado Col.; MA 1977, MLS 1981, PhD 1984, Indiana U.

LAKE, JEANINE, DataBase Coord., K-State Alumni Association (1987).

LAMB, LAWRENCE F., Asst. Prof. of Journalism and Mass Communications (1994). BA 1967, MBA 1992, Pennsylvania State U.

LAMB, MARY E.S., Asst. Prof. of Clothing, Textiles, and Interior Design (1992). BA 1974, Penn St. U.; MS 1992, Arizona St. U. (*)

LAMBERT, DORINDA J., Psychologist; Asst. Dir. of Clinical Services, U. Counseling Services (1985). BA 1968, Blackburn Col., Illinois; MA 1977, PhD 1984, U. of Nebraska–Lincoln.

LAMBERT, JOHN P., Assoc. Prof.; Dir. of Public Safety (1964). BS 1959, Lebanon Valley Col.; MPH 1963, U. of Michigan; PhD 1975, Kansas St. U.

LAMM, FREDDIE R., Assoc. Prof.; Agr. Engineer Research Scientist, NW Research–Ext. Cntr. (1979). BS 1978, MS 1979, U. of Missouri; PhD 1991, Kansas St. U. (*)

LAMOND, RAY E., Prof. of Agronomy; Ext. Specialist, Soil Fertility and Management (1982). BS 1973, MS 1975, PhD 1979, Kansas St. U. (*)

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LANGEMEIER, LARRY N., Prof. of Agricultural Economics; Ext. Agricultural Economist, Farm Management Studies (1968). BS 1963, U. of Nebraska; MS 1965, PhD 1968, U. of Missouri. (*)

LANGEMEIER, MICHAEL L., Assoc. Prof. of Agricultural Economics; Ext. Agricultural Economist, Farm Management (1990). BS 1984, MS 1986, U. of Nebraska; PhD 1990, Purdue U. (*)

LANGENKAMP, JERRY REESE, Prof. of Music (1970). BM 1953, U. of Oklahoma; MM 1958, DMA 1970, U. of Michigan. (*)

LANHAM, DALE L., Co. Ext. Agent, Agr., Woodson Co., Yates Cntr. (1974). BS 1973, Kansas St. U.

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LANNING, FRANCIS C., Assoc. Prof. Emeritus of Chemistry (1942). BS 1930, MS 1931, U. of Denver; PhD 1936, U. of Minnesota. (*)

LARMER, OSCAR VANCE, Prof. Emeritus of Art (1950). BFA 1949, U. of Kansas; MFA 1955, Wichita U. (*)

LARSON, GEORGE HERBERT, Prof. Emeritus of Biological and Agr. Engineering; Agr. Exp. Sta. (1939). BS 1939, MS 1940, Kansas St. U.; PhD 1955, Michigan St. U.; Professional Engineer, 1947.

LARSON, SUSAN S., Asst. Prof. Emerita of Human Dev. and Family Studies (1955). BS 1940, U. of Iowa; MS 1942, U. of Wisconsin.

LARSON, VERNON C., Prof. Emeritus of Agr. (1962). BS 1947, MS 1950, PhD 1954, Michigan St. U.

LaSEE–WILLEMSSEN, JENEEN, Asst. Prof., Reference, KSU Libraries (1996). BA 1992, MLS 1996, U. of Wisconsin.

LASHBROOK, RALPH RICHARD, Prof. and Head Emeritus, Department of Journalism (1934). BS 1929, Kansas St. U.; MS 1942, U. of Wisconsin. (*)

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LaTOUSH, ELIZABETH J., Co. Ext. Agent, Family and Consumer Sciences, Scott Co., Scott City (1986). BS 1962, U. of Wyoming; MS 1969, U. of Nebraska.

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LAUGHLIN, J. BRUCE, Dir. Emeritus, Career Planning and Placement Cntr. (1962). BS 1950, U. of Kansas; MS 1961, Kansas St. U.; JD 1967, Washburn Law School.

LAUGHLIN, DIANE, Conference Coord. (1994). BA 1979, U. of N. Iowa.

LAUGHLIN, EUGENE J., Prof. Emeritus of Accounting (1955). BS 1951, Rockhurst Col.; MS 1959, Kansas St. U.; CPA 1960, Kansas; PhD 1965, U. of Illinois. (*)

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LEACH, JAN E., Univ. Dist. Prof. of Plant Pathology; Research Plant Disease Physiologist, Agr. Exp. Sta. (1984). BS 1975, MS 1977, U. of Nebraska–Lincoln; PhD 1981, U. of Wisconsin–Madison. (*)

LEACH, GLINDA B., Co. Ext. Agent Family and Consumer Sciences Emerita, Shawnee Co., Topeka (1967). BS 1950, Southeast Missouri St. Col.; MS 1961, MEd 1966, U. of Missouri.

LEASE, KEVIN B., Asst. Prof. of Mechanical and Nuclear Engineering (1994). BS 1988, MS 1990, PhD 1994, U. of Iowa. (*)

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LEGG, JAMES C., Head and Prof. of Physics (1967). BS 1958, Indiana U.; MA 1960, PhD 1962, Princeton U. (*)

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LEUNG, HEI, Adj. Assoc. Prof. of Plant Pathology (1997); Plant Pathologist, IRRI, The Philippines; BS 1979, McGill U.; MS 1981, PhD 1984, U. Wisconsin–Madison.

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LI, LIGE, Assoc. Prof. of Mathematics (1986). BS 1964, Shanghai Normal U.; MS 1983, PhD 1986, Tulane U. (*)

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LIN, CHII-DONG, Distinguished Prof. of Physics (1976). BA 1969, Natl. Taiwan U.; MS 1970, PhD 1974, U. of Chicago. (*)

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LITTRELL, J. HARVEY, Prof. Emeritus, Education (1954). BA 1935, Iowa St. Teachers Col.; MA 1939, St. U. of Iowa; EdD 1950, U. of Missouri.

LITTRELL, LAUREL, Asst. Prof., Reference, KSU Libraries (1997). BA 1985, MA 1987, Kansas St. U.; MLS 1997, Emporia St. U.; Doctor of Music, U. of Missouri.

LITZ, CHARLES E., Prof., Education (1971). BA 1963, Ohio U.; MA 1967, PhD 1970, U. of Michigan. (*)

LOCKHART, CHARLES HOWARD, Assoc. Prof. Emeritus of Biology (1940). BS 1934, MS 1938, Kansas St. U. (*)

LOCKHART, MAUREEN A., Admin. Asst., Dean of Engineering (1996).

LOGAN, THOMAS D., Instr.; Kansas Industrial Ext. Services (1989). BS 1977, Kansas St. U.

LOMAS, LYLE W., Prof. and Head; Research Animal Scientist, SE Agr. Res. Cntr. (1979). BS 1975, MS 1976, U. of Missouri; PhD 1979, Michigan St. U. (*)

LONG, CHARLES E., Assoc. Prof. of Hort.; Research Horticulturalist, Woody Ornamentals, Agr. Exp. Sta. (1972). BS 1964, MS 1965, Oklahoma St. U.; PhD 1972, Kansas St. U. (*)

LONG, GLENN WESLEY, Asst. Prof. Emeritus of Sociology (1938). AB 1926, Baker U.; MS 1940, Kansas St. U. (*)

LONG, IVALEE McCORD, Prof. Emerita of Human Dev. and Family Studies (1957). BS 1933, MS 1951, Kansas St. U.; PhD 1964, Purdue U. (*)

LONG, JAMES H., Asst. Prof.; Research Agronomist SE Agr. Res. Cntr. (1983). MS 1980, PhD 1981, U. of Arkansas.

LOOKHART, GEORGE, Adjunct Prof. of Grain Science and Industry (1982). BS 1968, Kearney St. Col.; PhD 1973, U. of Wyoming. (*)

LOSEY, JANICE W., Medical Technologist (1995). BS 1979, Kansas St. U.

LOUB, ARTHUR F., Pres. Emeritus and Consultant, KSU Foundation (1979). BA 1952, Duke U.

LOUCKS, WILLIAM L., Prof. of Forestry; Tree Planting Program Leader (1967). BS 1963, Colorado St. U.; MS 1971, Kansas St. U.

LOUGHIN, THOMAS M., Assoc. Prof. of Statistics; Statistical Consultant, Agr. Exp. Sta. (1993). BS 1985, Rensselaer Polytechnic Institute; MS 1987, U. of North Carolina–Chapel Hill; PhD 1993, Iowa St. U. (*)

LOVE, JUDITH, Asst. Prof. Emeritus of Art (1970). AA 1961, Cottey Col.; BFA 1964, Kansas City Art Inst.; MFA 1969, U. of Nebraska. (*)

LOVIN, CAROLE, Registrar Coord., Col. of Tech. and Aviation (1992). BA 1989, U. of Kansas.

LOWE, PAUL R., Asst. Dir. of Pre Award Services; Research and Sponsored Programs (1987). BS 1985, Eastern Illinois U.

LU, GUIXIANG, Research Asst. of Grain Science and Industry (1995). BS 1984, Shanghai Chinese Medical Col.

LU, MAX, Asst. Prof. of Geography (1996). BS 1983, Hangzhou U. of China; MA 1986, U. of Science and Tech. of China; PhD 1996, Indiana U. (*)

LU, XIAOHUA, Asst. Prof. of Economics (1997). BS 1982, Shanghai Teachers U.; PhD 1994, U. of Texas. (*)

LUBBERS, CHARLES A., Assoc. Prof. of Journalism and Mass Communications (1991). BS 1982, MA 1984, S. Dakota St. U.; PhD 1992, U. of Nebraska–Lincoln. (*)

LUCAS, MICHAEL S. P., Prof. Emeritus of Electrical and Computer Engineering (1968). MS 1962, PhD 1964, Duke U. (*)

LUDLUM, ANN, Co. Ext. Agent, Family and Consumer Sciences, Allen Co., Iola (1995). BS 1970, Pittsburg St. U.

LULLA, KAMLESH, Adjunct Faculty of Geography (1992). BA 1970, MA 1972, PhD 1977, India; PhD 1983, Indiana State University.(*)

LUNDQUIST, MARVIN C., Asst. Prof. Emeritus of Agronomy; Research Agronomist in Charge, Cornbelt Experimental Field (P.O. Powhattan), Agr. Exp. Sta. (1951). BS 1950, MS 1952, Kansas St. U.

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LYNCH, KEITH D., Assoc. Prof. of Forestry; Forestry Specialist, Tree Improvement (1977). BS 1967, MS 1970, Oklahoma St. U.; PhD 1980, Auburn U.

LYNCH, MICHAEL L., Asst. VP for Institutional Advancement/Educational and Personal Dev. Programs; Dir., Academic Assistance Cntr.; Assoc. Prof., Education (1972). BS 1967, MS 1968, EdD 1972, Indiana U. (*)

MAATTA, ERIC A., Prof. of Chemistry (1981). BS 1974, Carnegie-Mellon U.; PhD 1980, Indiana U. (*)

MACDONOUGH, TOMI S., Assoc. Prof. of Psychology (1983). PhD 1972, U. of Georgia.

MACFARLAND, CHARLOTTE, Assoc. Prof. of Speech (1978). BA 1968, MA 1969, U. of Wisconsin. (*)

MACFARLAND, DAVID T., Assoc. Prof. of Journalism and Mass Communications (1972). BA 1965, MA 1966, Stetson U.; PhD 1972, U. of Wisconsin. (*)

MACRITCHIE, FINLAY, Prof. of Grain Science and Industry (1997). BS 1958, U. of Australia; PhD 1962, U. of Sydney.

MACHOR, JAMES L., Prof. of English (1990). BA 1972, Ohio U.; MA 1974, U. of Idaho; PhD 1980, U. of Illinois. (*)

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MADER, ERNEST LEE, Prof. Emeritus of Agronomy (1948). BS 1936, MS 1944, Oklahoma St. U.; PhD 1948, U. of Nebraska

MADISON, ANITA, Community Resource Dir., UFM (1988). BS 1986, Kansas St. U.

MADL, RONALD L., Dir., Wheat Research Center (1997). BS 1966, Baker U.; MS 1969, PhD 1973, Kansas St. U.

MADSEN, DEBORA L., Assoc. Prof., Government Publications, KSU Libraries (1983). BA 1970, U. of California–Los Angeles; MLS 1979, U. of Arizona.

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MAGGARD, MARGARET H., Co. Ext. Agent, Family and Consumer Sciences, Butler Co., El Dorado (1963). BS 1963, Kansas St. U.

MAGGIO, ANNETTE, Admin. Asst., Dean of Arts and Sciences (1997).

MAGHIRANG, RONALDO G., Asst. Prof. of Biological and Agricultural Engineering (1994). BS 1982, MS 1986, U. of the Phillippines; PhD 1992, Pennsylvania St. U. (*)

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MAHONEY, SHERRIE Z., Co. Ext. Agent, Family and Consumer Sciences, Saline Co., Salina (1980). BS 1972, N.W. Missouri St. U.; MS 1978, U. of Missouri.

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MANNELL, TERRENCE L., Co. Ext. Agent, Hort., Ellis Co., Hays (1978). BS 1973, Kansas St. U.; MS 1977, Ohio St. U.

MANNEY, THOMAS R., Prof. of Physics (1971). BA 1958, Western Washington St. Col.; PhD 1964, U. of California. (*)

MANNING, DAVID R., Research Asst. of Biochemistry (1979). BS 1979, Kansas St. U.

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MANRY, E. CLIFFORD, Co. Ext. Agricultural Agent, Emeritus, Pawnee Co., Larned (1940). BS 1940, Oklahoma St. U.

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MATTESON, DENNIS K., Instr. Emeritus; Kansas Industrial Ext. Services (1981). BS 1978, MS 1980, Kansas St. U.

MATTHEWS, JOHN CARTER, Prof. Emeritus of Chemical Engineering (1962). BS 1959, DSc 1965, Washington U. (*)

MATTSON, GARY A., Assoc. Prof. of Landscape Arch. and Regional and Community Planning (1992). BA 1969, SUNY–Albany; MPA 1976, City Univ. of New York; MCP 1978, U. of Rhode Island; Ph.D. 1983, U. of Delaware. (*)

MATTSON, RICHARD H., Prof. of Hort.; Horticultural Therapy (1969). BS 1964, U. of Nebraska; PhD 1969, U. of Minnesota. (*)

MAULLAR, MARCI E., Assoc. Prof. of Speech (1988). BA 1975, MA 1981, Kent St. U.; MFA 1986, Penn St. U. (*)

MAXON, RICHARD C., Prof. Emeritus of Agricultural Economics (1981). PhD 1963, U. of Missouri.

MAXWELL, THOMAS M., Co. Ext. Agent Agr., Saline Co., Salina (1981). BS 1978, MS 1980, Kansas St. U.

MAXWELL, THOMAS R., Co. Ext. Agent Emeritus, Agr. Allen Co., Iola (1954). BS 1954, MS 1968, Kansas St. U.

MAY, CHERYL, Dir., News Services (1978). BA 1974, U. of Missouri–Kansas City; MS 1985, Kansas St. U.

MAYO, MICHAEL G., Assoc. Prof. of Arch. (1994). BArch 1977, MBA 1979, Kansas St. U.

McADOO, ROBERT STANDISH, Assoc. Specialist; Ext. PRIDE Program Coordinator (1989). BS 1967, Emporia St. U.; MS 1970, Kansas St. U.

McALAVY, TIMOTHY W., Assoc. Communications Specialist, Communications (1996). BS 1991, Texas A&M U.

McALLISTER, RICHARD M., Asst. Prof. of Kinesiology (1997). BSc 1979, U. of Ottawa; MA 1982, Ball State U.; PhD 1990, SUNY–Syracuse.

McANARNEY, HARRY EDWARD, Assoc. Prof. Emeritus, Education (1957). BS 1943, Emporia St. U.; MS 1947, EdD 1958, U. of Kansas. (*)

McCAHON, CYNTHIA S., Asst. Dean and Assoc. Prof. of Management (1989). BS 1978. Purdue; MS 1980. PhD 1987. Kansas St. U. (*)

McCARTHY, PAUL E., Prof. Emeritus of English (1967). BA 1948. MFA 1951. St. U. of Iowa: PhD 1962. U. of Texas. (*)

McCLASKEY, JACKIE M., Asst. Dean of Agriculture (1996). BS 1993. Kansas St. U: MS 1995. Texas A&M.

McCLURE, GREGORY W., Co. Ext. Agent. Clay Co., Clay Center (1986). BS 1980. Kansas St. U.

McCLUSKEY, PATRICK, Senior Scientist of Grain Science and Industry (1995). BS 1979. MS 1982. Kansas St. U.

McCOLM, CAROLYN S., Co. Ext. Agent, Family and Consumer Sciences. Graham Co., Hill City (1989). BS 1987. MS 1989. Pittsburg St. U.

McCORMACK, GREGORY D., Co. Ext. Agent. Agr., Reno Co.. Hutchinson (1990). BS 1989. Kansas St. U.

McCORMICK, FRANK JAMES, Prof. Emeritus of Civil Engineering (1939). BS 1927. MS 1931. Iowa St. U.: Professional Engineer. 1944.

McCOY, JOHN HENRY, Prof. Emeritus of Agricultural Economics (1940). BS 1940. MS 1942. Kansas St. U.; PhD 1955. U. of Wisconsin. (*)

McCULLOH, JOHN M., Prof. of History (1973). BA 1965. Kansas U.; MA 1966. PhD 1971. U. of California. Berkeley. (*)

McCULLOH, KAREN I., Asst. to Dean. KSU Libraries (1987). BA 1965. U. of Kansas; MS 1988. Kansas St. U.

McCULLOUGH, ELIZABETH, Prof. of Clothing. Textiles. and Interior Design (1978). BS 1974. Ohio St. U.; MS 1975. PhD 1978. U. of Tennessee. (*)

McCULLY, WILLIAM B., Co. Ext. Agricultural Agent Emeritus. Harper Co.. Anthony (1959). BS 1954. MS 1959. Oklahoma St. U.

McDONALD, M. JEAN, Asst. to the Dean. KSU Libraries (1992). BS 1968. Emporia St. U.: MPA 1997. Kansas St. U.

McDONALD, RICHARD N., Prof. Emeritus of Chemistry (1960). BS 1954. MS 1955. Wayne St. U.; PhD 1957. U. of Washington. (*)

McELLHINEY, ROBERT R., Prof. Emeritus of Grain Science and Industry; Feed Tech. Research Scientist. Agr. Exp. Sta. (1979). BS 1952. Purdue U.. MBA 1963. Indiana U.. Mgt. of Mgrs. Prog. 1972. U. of Michigan.

McELROY, MARY A., Prof. of Kinesiology (1978). BA 1974. Queens Col.. New York; MA 1975. Ohio St. U.; PhD 1978. U. of Maryland. (*)

McEOWEN, ROGER T., Assoc. Prof. of Agr. Economics; Ext. Agr. Economist. Agr. Law (1993). BS 1986. Purdue U.; MS 1990. Iowa St. U.; JD 1991. Drake U. (*)

McFARLAND, MARCIA R., Assoc. Prof.. Ext. Specialist. 4–H Youth Programs (1980). BS 1975. MS 1977. Wichita St. U.

McFARLIN, NANCY, Assoc. Prof., Reference. KSU Libraries (1987). BS 1977. Fort Hays St. U.; MLS 1978. Emporia St. U.; PhD 1986. Kansas St. U.

McGATLIN, JODI, R., Dir. of Constituent Programs. K-State Alumni Association (1996). BS 1990. Kansas St. U.

McGAUGHEY, K. BOBETTE, Asst. to the Dean. Graduate School (1989). BS 1986. Kansas St. U.

McGAUGHEY, WILLIAM H., Adjunct Prof. of Entomology: Research Entomologist. USDA ARS (1973). BS 1963. Texas Tech. Col.; MS 1965. PhD 1967. Iowa St. U. (*)

McGINNESS, KENNETH E., Co. Ext. Agricultural Agent Emeritus. Johnson Co.. Olathe (1954). BS 1949. Kansas St. U.

McGLASHON, DOLORES M., Assoc. Prof.; Communications Specialist (1977). AB 1974. Baker U.; MS 1981. Kansas St. U.

McGOWAN, JUANITA M., Asst. Prof. of Social Work: Dir. of American Ethnic Studies (1980). BS 1974. MA 1975. U. of Kansas; PhD 1991. Kansas St. U.

McGOWAN, REGINLAND, Dir. of Upward Bound Program (1986). BS 1979. Alcorn U.: MS 1986. Kansas St. U.

McGRATH, DIANE, Assoc. Prof.. Education (1987). AB 1963. Oberlin Col.: MS 1969. MEd 1983. PhD 1973. U. of Illinois. (*)

McGRAW, BETTY R., Assoc. Prof. of Modern Languages (1963). Licence es Lettres CATES 1961. PhD 1982. Universite de Paris. (*)

McGRAW, EUGENE THOMAS, Prof. Emeritus of Interior Arch. and Regional and Community Planning (1958). BArch 1957. Oklahoma St. U.: MRP 1963. Kansas St. U. (*)

McHANEY, ROGER W., Asst. Prof. of Management (1995). BS 1984. MBA 1989 Lake Superior St. U.; PhD 1995. U. of Arkansas. (*)

McKEE, R. MILES, Prof. of Animal Sciences and Industry: Beef Cattle Research Scientist. Agr. Exp. Sta. (1959). BS 1951. MS 1963. Kansas St. U.: PhD 1967. U. of Kentucky.

McKINNEY, JANA R., Co. Ext. Agent, 4–H Youth. McPherson Co.. McPherson (1985). BS 1985. U. of Idaho.

McKINNEY, KATHERYN ANN, Assoc. Prof. Emerita of Physical Education and Leisure Studies (1946). BS 1934. Kansas St. U.; MA 1935. George Peabody Col. for Teachers. (*)

McLAUGHLIN, JIM, Head Volleyball Coach (1997). BS 1983. U. of California–Santa Barbara.

McLAUGHLIN, RONALD JR., Assoc. Prof. of Small Animal Surgery (1991). DVM 1985. U. of Missouri: DVSc 1991. U. of Guelph. (*)

McMAHON, JANICE C., Co. Ext. Agent, EFNEP, Sedgwick Co.. Wichita (1983). BS 1980. MS 1982. Colorado St. U.

McMANIS, HELEN L., Asst. Dir. Emerita. Housing and Dining Services (1966). BS 1941. MS 1972. Kansas St. U.

McMILLAN, KELLY, Asst. Track and Field Coach (1997). BS 1992. U. of Nebraska.

McMURPHY, ROSE M., Assoc. Prof. of Anesthesiology (1989). DVM 1982. Washington St. U.; Diplomate 1989. American Col. of Vet. Anesthesiology.

McNAMARA, MICHAEL C., Assoc. Prof. of Arch. (1988). BArch 1969. North Carolina St. U.; MA 1974. UCLA. Registered Architect. (*)

McNEIL, JOAN N., Asst. Prof. Emerita of Human Dev. and Family Studies (1970). BS 1951. Kansas St. U.: MS 1956. U. of Minnesota; PhD 1980. Kansas St. U. (*)

McNULTY, MARK S., Assoc. Prof. of Economics (1985). BS 1978. U. of S. Dakota; PhD 1985. Iowa St. U. (*)

McNUTT, J. D., Area Ext. Dir., South Central (1995). BS 1976. Oklahoma St. U.; MED 1978. East Central U.. Oklahoma; EDD 1986. Oklahoma St. U.

McQUEEN, LEE V., Dir.. Facilities Architectural and Engineering Services (1988). BS 1978. Kansas St. U.

McREYNOLDS, KENNETH L., Assoc. Prof. Emeritus; Ext. Agricultural Economist. South Central (1949). BS 1950. MS 1954. Kansas St. U.

McWILLIAMS, DONALD D., Co. Ext. Agricultural Agent Emeritus. Wallace Co., Sharon Springs (1956). BS 1948. Kansas St. U.

MEAUX, MARY, Asst. Athletic Trainer (1997). BS 1993. U. of Southwestern Louisiana; MS 1995. Clemson.

MEDLIN, ROGER C., Prof. Emeritus; Communications (1967). BS 1948. MS 1969. Kansas St. U.

MEEDS, ROBERT, Asst. Prof. of Journalism and Mass Communications (1997). BA 1983. MA 1990. Ball St. U.; PhD 1998. U. of Missouri.

MEIREIS, CLIFFORD L., Co. Ext. Agricultural Agent Emeritus, Norton Co., Norton (1955). BS 1953. Kansas St. U.; MEd 1962. Colorado St. U.

MEISNER, ROBERT G., Prof. Emeritus. Education (1969). BS 1948. Oklahoma A&M Col.: MS 1957. Oklahoma St. U.: EdD 1967. U. of California. Berkeley. (*)

MELHEM, HANI G., Assoc. Prof. of Civil Engineering (1991). BS 1981. Cairo U.: MS 1987. PhD 1989. U. of Pittsburg. (*)

MELOAN, CLIFTON E., Prof. Emeritus of Chemistry (1959). BS 1953. Iowa St. U.: PhD 1959. Purdue U. (*)

MELTON, AUSTIN C., Assoc. Prof. of Computing and Information Sciences (1984). BA 1971. Friends U.: MS 1974. PhD 1980. Kansas St. U. (*)

MELVIN, MATTHEW, Asst. Dean/Dir. of Col. Advancement. Col. of Tech. and Aviation (1997). BA 1990. Central Col.: MS 1993. Western Illinois U.

MENDENHALL, BURNEY L., Asst. Prof. of Modern Languages (1965). BA 1950. Washburn U.: MS 1953. Emporia St. U.: PhD 1964. U. of Kansas. (*)

MENG, HUI, Asst. Prof. of Mechanical and Nuclear Engineering (1994). BS 1984. MS 1987. Zhejiang U.: PhD 1994. U. of Houston. (*)

MENGARELLI, JIMMIE J., Co. Ext. Agent. 4–H. Crawford Co.. Girard (1985). BS 1976. Kansas St. U.

MENGEL, DAVID, Prof. and Head of Agronomy. Agr. Expt. Sta. (1998). BS 1970. MS 1972. Purdue U.: PhD 1975. North Carolina State U.

MERKLIN, JOSEPH FREDERICK, Prof. of Mechanical and Nuclear Engineering (1967). BS 1957. Manhattan Col. of New York: PhD 1963. U. of Minnesota. (*)

MERRIMAN, SCHARON V., Co. Ext. Agent Emerita. Family and Consumer Sciences. Reno Co.. Hutchinson (1971). BS 1970. MS 1977. Kansas St. U.

MESSNER, MICHAEL, Residence Life Coord.. Housing and Dining Services (1997). BS 1995. MEd 1997. Grand Valley St. U.

MESSENHEIMER, ALVA ERNEST, Assoc. Prof. Emeritus of Mechanical and Nuclear Engineering (1942). BS 1924. Kansas St. U.; Professional Engineer. 1948.

MESZ, DEBORAH, Media Specialist. Col. of Tech. and Aviation (1996). BA 1994. U. of Missouri–Columbia.

METZLER, CHRISTINE I., Research Asst. of Psychology (1983). MA 1979. Villanova U.

MEYER, GENE M., Instr.; Ext. Specialist. Small Business Energy (1981). BS 1971. U. of Kansas.

MEYER, SALLY K., Instr. of Family Studies and Human Services (1989). BA 1986. MS 1989. S. Dakota St. U.

MEYER, SHANA L.WARKENTINE, Residence Life Coord., Housing and Dining Services (1997). BS 1995. Emporia St. U.; MA 1997. Emporia St. U.

MICHAELS, CHARLES L., Asst. Prof. of Animal Sciences and Industry; In Charge KABSU. Agr. Exp. Sta. (1965). BS 1959. Kansas St. U.

MICHIE, ARUNA NAYYAR, Assoc. Prof. of Political Science (1976). AB 1966. Smith Col.; MA 1969. PhD 1975. Michigan St. U. (*)

MICHIE, BARRY H., Dir. of Study Abroad Programs (1976). BA 1965. Lewis and Clark Col.; MA 1970. PhD 1976. Michigan St. U.

MIGUT, MELISSA A., Asst. Forester. District Forester. Northeast (1997). BS 1992. U. of Illinois at Urbana–Champaign.

MILBOURN, MAX W., Assoc. Prof. Emeritus of Journalism and Mass Communications (1949). BA 1938. Wichita St. U.

MILEY, JAMES D., Asst. Prof. of Sociology (1970). BA 1959. Millsaps Col.; MA 1963. Louisiana St. U.; PhD 1970. Tulane U. (*)

MILLER, ANITA K., Co. Ext. Agent. 4–H Youth. Dickinson Co.. Abilene (1984). BS 1984. MS 1991. Kansas St. U.

MILLER, CAROL LYNN, Asst. Prof. of Modern Languages (1968). BA 1958. MA 1959. Vanderbilt U.; PhD 1963. Washington U. (*)

MILLER, CECIL H., Prof. Emeritus of Philosophy (1945). AB 1930, U. of Kansas; MA 1939, U. of California. (*)

MILLER, CHARLES L., JR., Co. Ext. Agent, Hort., Saline Co., Salina (1985). BS 1969, MS 1981, Kansas St. U.

MILLER, DELBERT D., Asst. Football Coach (1988). BA 1972, Central Col.; MA 1975, North Iowa U.

MILLER, ELSIE LEE, Asst. Prof. Emerita; Ext. Specialist, Food Science and Meal Management (1941). BS 1934, MS 1942, Kansas St. U.

MILLER, FORREST R., Prof. of Mathematics (1968). BS 1962, U. of Oklahoma; MA 1965, PhD 1968, U. of Massachusetts. (*)

MILLER, GERALD DALE, Asst. Prof. Emeritus of Grain Science and Industry (1946). BS, BA 1964, MS 1965, U. N. Dakota; PhD 1979, U. of Missouri.

MILLER, JAMES J., Asst. to the Vice Provost for Academic Services and Technologies (1997). BS 1964, MS 1965, U. of N. Dakota; PhD 1979, U. of Missouri.

MILLER, JO BYRNES, Instr. of Dance (1997). BS 1989, Kansas St. U.; BS 1992, Kansas St. U.; MFA 1995, Texas Woman's U.

MILLER, JUDITH L., Head and Prof. of Hotel, Restaurant, Institution Management and Dietetics (1989). BS 1967, Ouachita Baptist U.; MBA 1984, Southern Illinois U.; PhD 1986, Texas Womens U. (*)

MILLER, KENT B., Farm Management Association Fieldman (1983). BS 1980, Oklahoma St. U.

MILLER, MICHAEL H., Asst. Prof. of Computing and Information Sciences (1960). BS 1958, MS 1960, Iowa St. U.

MILLER, RICHARD A., Co. Ext. Agent, Agr., Johnson Co., Olathe (1983). BS 1982, Lincoln U.; MS 1990, Kansas St. U.

MILLER, RICHARD B., Assoc. Prof. of Family Studies and Human Services (1988). BS 1982, MS 1984, Brigham Young U.; PhD 1989, U. of Southern California. (*)

MILLER, RUTH D., Asst. Prof. of Electrical and Computer Engineering (1995). BS 1984, Lafayette Col.; MS 1985, PhD 1990, U. of Rochester. (*)

MILLERET, ROY J., Assoc. Prof. Emeritus, Diagnostic Lab; Research Pathologist (1960). DVM 1944, MS 1959, Kansas St. U.

MILLIKEN, GEORGE A., Prof. of Statistics; Dir., Statistical Laboratory; Statistical Consultant, Agr. Exp. Sta. (1969). BS 1965, MS 1968, PhD 1969, Colorado St. U. (*)

MILLS, ROBERT B., Prof. Emeritus of Entomology; Research Entomologist, Stored Product Insects, Agr. Exp. Sta. (1963). BS 1949, Kansas St. U.; MEd 1953, U. of Colorado; PhD 1964, Kansas St. U. (*)

MINGLE, JOHN O., Prof. Emeritus of Architectural Engineering and Construction Science (1960). BS 1953, MS 1958, Kansas St. U.; PhD 1960, Northwestern U.; JD Law 1980, Washburn U. (*)

MINOCHA, HARISH C., Prof. of Virology, Dept. of Pathology and Microbiology; Research Virologist (1969). BVSc 1955, Punjab U., India; MS 1963, PhD 1967, Kansas St. U. (*)

MINSHALL, BETTIE C., Conference Coord. (1995). BS 1973, NW Missouri St. U.; MS 1979, Iowa St. U.; PhD 1986, U. of Minnesota.

MINTERT, JAMES R., Prof. of Agricultural Economics; Ext. Agricultural Economist, Marketing (1986). BS 1978, MS 1982, Purdue U.; PhD 1986, U. of Missouri. (*)

MINTON, J. ERNEST, Prof. of Animal Sciences and Industry (1983). BS 1977, Western Kentucky U.; MS 1980, PhD 1983, Oklahoma St. U. (*)

MINZER, ELLEN, Asst. Women's Crew Coach (1997). BS 1988, Villanova U.

MIRT, LINDA J., Co. Ext. Agent, Family and Consumer Sciences and 4–H. Sumner Co., Wellington (1976). BS 1972, Kansas St. U.; MEd 1975, Pennsylvania St. U.

MITCHELL, JAMES C., Prof. Emeritus of Psychology (1966). BS 1957, MA 1959, PhD 1962, Ohio St. U. (*)

MITCHELL, HOWARD LEE, Prof. Emeritus of Biochemistry (1946). BS 1938, Oklahoma St. U.; PhD 1946, Purdue U. (*)

MIXER, VIRGINIA K., Instr., Education (1975). BS Ed. 1969, Pittsburg St. U.; MS 1975, Kansas St. U.

MIZUNO, MASAAKI, Assoc. Prof. of Computing and Information Sciences (1987). BS 1978, Keio U., Japan; MS 1982, Pennsylvania St. U.; PhD 1987, Iowa St. U. (*)

MOCK, DONALD E., Prof. of Entomology, Ext. Specialist, Livestock Entomology (1973). BA 1959, Western St. Col.; PhD 1974, Cornell U. (*)

MOCK, JAMES B., Sr. Prod./Dir., Kansas Regents Educ. Comm. Center (1992). BA 1980, Indiana U.

MOEDER, LAWRENCE E., Dir. of Student Financial Assistance, Interim Dir. of Admissions (1977). BS 1977, MS 1980, Kansas St. U.

MOELLER, LARRY D., Staff Physician, Lafene Health Cntr. (1983). MD 1977, U. of Nebraska–Omaha.

MOEN, ROBERT, Asst. Baseball Coach (1996). BS 1993, Arizona.

MOLINEUX, BARRY R., Instr. of Family Studies and Human Services (1970). BS 1966, MA 1968, Kansas St. U.

MOLT, MARY, Asst. Dir., Housing and Dining Services, Asst. Prof., Hotel, Restaurant, Institution Management, and Dietetics (1973). BS 1971, U. of Nebraska–Kearney; MS 1977, Oklahoma St. U.; PhD 1995, Kansas St. U.

MOLZ, DIXIE I., Co. Ext. Home Economist Emerita, Stafford Co., St. John (1953). BS 1944, Northwestern St. U.

MONTELONE, BETH A., Assoc. Prof. of Biology (1988). BS 1976, Rensselaer Polytechnic Inst., MS 1978, PhD 1982, U. of Rochester. (*)

MONTGOMERY, JOSEPH, KSDB-FM Station Manager (1989). BS 1984, Kansas St. U.

MONTOYA–BALLOU, BECKY, Ticket Systems Mgr. (1990). BA 1985, New Mexico St. U.

MOORE, CHARLES, Assoc. Prof. of Mathematics (1990). BA 1978, Washington U.; MA 1980, U. of California–Santa Barbara; PhD 1986, U. California–Los Angeles. (*)

MOORE, HUGH C., Adjunct Clinical Assoc. of Med. Tech. (1979). BS 1955, Texas Christian; MD 1959, U. of Texas.

MOORE, WALTER ASHTON, Asst. Prof. Emeritus of Agronomy (1943). BS 1944, Kansas St. U.

MOORE, WILLIAM E., Prof. of Pathology and Microbiology, Research Clinical Pathologist (1968). BS 1956, DVM 1958, Cornell U.; PhD 1968, U. of Minnesota; Diplomate 1972, American Col. of Vet. Pathologists. (*)

MORCOS, MEDHAT M., Prof., Electrical and Computer Engineering (1986). BS 1966, MS 1978, Cairo U.; PhD 1984, U. of Waterloo. (*)

MORCOS, SHARON K., Instr. of Foods and Nutrition (1983). BS 1977, Texas Tech U.; MS 1984, Kansas State U.

MORELAND, RACHEL S., Prof., Library Network Services, KSU Libraries (1971). BS 1955, U. of Arizona; MS 1970, Kansas St. U.; MLS 1988, U. of Missouri.

MORGAN, JOHN MARK, Assoc. Prof. in Hort., Forestry and Recreation Resources (1993). PhD 1987, Texas A&M U.

MORGAN, PHILLIP D., Asst. Baseball Coach (1988). BSE 1976, Missouri Southern St. U.

MORGAN, STEVE, Special Projects Manager, Communications (1982). BA 1965, U. of Omaha; MA 1968, U. of Nebraska.

MORGAN, THOMAS D., Research Asst. of Entomology (1980). BS 1977, MS 1979, U. of Missouri.

MORIN, RYAN, Asst., Systems Engineer, Communications (1993). BS 1992, Kansas St.–Salina.

MORNINGSTAR, WILLIAM S., Instr. of Sociology (1982). MA 1979, West Virginia U.

MORRICAL–FREDERKING, CARLA M., Co. Ext. Agent, Family and Consumer Sciences, Ellis Co., Hays (1983). BS 1982, Kansas St. U.

MORRILL, JAMES L., JR., Prof. Emeritus of Animal Sciences and Industry; Dairy Cattle Research Nutritionist, Agr. Exp. Sta. (1962). BS 1958, Murray St. Col.; MS 1959, U. of Kentucky; PhD 1963, Iowa St. U. (*)

MORRIS, MAX B., Assoc. Specialist Emeritus, Ark Valley Area Commercial Hort. Agent, South Central (1989). BS 1959, Kansas St. U.

MORRIS, PETE, Dir. of Fiscal Affairs and Grants and Contracts, Col. of Tech. and Aviation (1990). BS, ME, Wichita St. U.

MORRISON, FRANK D., Prof. Emeritus of Hort.; Ext. State Leader, Hort. Program (1966). BS 1951, MS 1959, U. of Idaho; PhD 1966, Michigan St. U. (*)

MORRISON, LORETTA S., Co. Ext. Agent, Ag. Wichita Co., Leoti (1997). BS 1995, Kansas St. U.

MORROW, SHARON M., Dir. of U. Publications (1986). BS 1975, Ball St. U.

MORSE, REED FRANKLIN, Prof. Emeritus of Civil Engineering (1923). BA 1921, Cornell Col.; BS 1923, Iowa St. U; MS 1933, Kansas St. U.; PhD 1941, Cornell U.; Professional Engineer, 1939.

MORSE, RICHARD L. D., Prof. Emeritus of Human Dev. and Family Studies (1955). BA 1938, U. of Wisconsin; PhD 1942, Iowa St. U. (*)

MORTENSON, GARY C., Assoc. Prof. of Music (1989). BME 1978, Augustana Col., MM 1981, Ithaca Col. DM 1984 U. of Texas. (*)

MORTVEDT, MARJORY M., Prof.Emerita; Coord., Ext. Staff and Program Dev. (1979). BS 1962, MS 1967, PhD 1971, Iowa St. U.

MOSER, HERBERT CHARLES, Prof. Emeritus of Chemistry (1957). BA 1952, San Jose St. U.; PhD 1957, Iowa St. U. (*)

MOSER, STEVEN C., Assoc. Prof. of Architectural Engineering and Construction Science (1988). BS 1980, Kansas St. U.; MS 1988, U. of Colorado, Boulder. Professional Engineer. (*)

MOSES, WILLIAM R., Prof. Emeritus of English (1950). BA 1932, MA 1933, PhD 1939, Vanderbilt U. (*)

MOSHER, ROBIN A., Instr. of English (1983). BA 1975 Washburn U.; MA 1983, Kansas St. U.

MOSHIER, LOREN J., Assoc. Prof. of Agronomy; Weed Control Research Scientist, Agr. Exp. Sta. (1977). BA 1970, Goshen Col.; MS 1974, PhD 1977, Michigan St. U. (*)

MOSIER, DEREK A., Prof. of Pathology (1990). DVM 1978, Kansas St. U.; PhD 1985, Oklahoma St. U.; Diplomate 1986, American Col. of Vet. Pathologist. (*)

MOSIER, JACOB E., Prof. Emeritus of Clinical Sciences (1945). DVM 1945, MS 1948, Kansas St. U.; Diplomate 1972, American Col. of Vet. Internal Medicine. (*)

MOSIER, NANCY K., Interim Unit Administrator, Arts, Sciences, and Business, Col. of Tech. and Aviation (1981). BA 1967, Wichita St. U.; MS 1987, Kansas St. U.

MOXLEY, VIRGINIA M., Assoc. Dean of Human Ecology; Prof. of Family Studies and Human Services (1985). BS 1968, MS 1969, PhD 1977, Kansas St. U. (*)

MOYER, JOSEPH L., Prof.; Forage Crops Research Agronomist, SE Agr. Res. Cntr. (1978). BS 1968, MS 1969, PhD 1971, Kansas St. U.

MROZEK, DONALD J., Prof. and Head of History (1972). BA 1966, Georgetown U.; MA 1968, PhD 1972, Rutgers U. (*)

MUELLER, DELBERT D., Assoc. Prof. of Biochemistry; Assoc. Biochemist, Agr. Exp. Sta. (1968). BS 1962, PhD 1966, U. of Oklahoma. (*)

MUENZENBERGER, THOMAS B., Assoc. Prof. of Mathematics (1973). BS 1965, MS 1967, U. of Florida, PhD 1972, U. of Wyoming. (*)

MUGLER, DAVID J., Assoc. Dean Emeritus and Prof. Emeritus of Agr.; Dir. of Academic Programs (1965). BS 1959, Kansas St. U.; MS 1962, U. of Wisconsin; PhD 1969, Kansas St. U. (*)

MUILENBURG, GRACE E., Assoc. Prof. Emerita (1969). BS 1947, U. of Kansas; MA 1969, U. of Missouri, Columbia.

MUIÑO, PEDRO, Asst. Prof. of Chemistry (1995). BS 1989, U. of Santiago, Spain; PhD 1993, Montana St. U. (*)

MUIR, WILLIAM L., Asst. to the Vice President/ Community Relations (1987). BS 1977, Kansas St. U.

MULLER, JAMES, Assoc. Dir., Intercollegiate Athletics (1988). BA 1979, Rockhurst Col.

MULLER, MICHAEL A., Adjunct Prof. of Entomology; USDA Grain Marketing Research Ctr., Stored Grain Insect Pheromones (1995). BSA 1966, MS 1967, PhD 1970, U. of Georgia.

MUNCE, JAMES C., Prof. of Art (1972). BFA 1966, Minneapolis School of Art; MFA 1971, Indiana U. (*)

MUNSON, DEANNA M., Assoc. Prof. of Clothing, Textiles, and Interior Design; Ext. Specialist, Textiles (1967). BS 1966, MS 1967, PhD 1980, Kansas St. U. (*)

MUNTZ, PAMELA L., Co. Ext. Agent, Family and Consumer Sciences; Kiowa Co., Greensburg (1990). BS 1970, Kansas St. U.

MURPHY, CARLIN T., Co. Ext. Agent, Wabaunsee Co., Alma (1989). BS 1985, Kansas St. U.

MURPHY, DIANE I., Academic Advisor, Education (1989). BS 1983, Northern St. U.; MS 1986, Kansas St. U.

MURPHY, JAMES PATRICK, Prof. of Biological and Agricultural Engineering; Ext. State Leader, Agricultural Engineering Program (1979). BS 1968, MS 1970, Kansas St. U.; Professional Engineer, 1972.

MURPHY, MARTHA E., Instr., Co. Ext. Agent, EFNEP; Crawford Co., Girard (1991). BS 1974, Kansas St. U.

MURPHY, SANDRA D., Asst. Instr. of Biochemistry (1983). BS 1960, U. of Missouri.

MURPHY, STEPHEN M., Head and Assoc. Prof. of Interior Arch. (1968). BS 1968, Kansas St. U.; MEd 1974, U. of Missouri.

MURPHY, THOMAS, Adjunct Assoc. Prof. of Human Dev. and Family Studies (1990). BA 1964, Westminster Col.; MD 1968, U. of Oklahoma School of Medicine.

MURRAY, ANN D., Assoc. Prof. of Family Studies and Human Services (1988). BS 1967, Hollis Col.; MA 1971, Catholic U.; PhD 1978, Macquarie U. (*)

MURRAY, BEVERLY R., Asst. Prof. of Journalism and Mass Communications (1992). BA 1988, Virginia Polytechnic Inst and St. U.; JD 1991, Col. of William and Mary.

MURRAY, DEBORAH A., Instr. of English (1988). BA 1983, Central St. U., MA 1986, Kansas St. U.

MURRAY, JOHN P., Dir. and Prof. of Family Studies and Human Services (1985). BA 1965, John Carroll U.; MA 1967, PhD 1970, The Catholic U. of America. (*)

MURRAY, JOSEPH S., Asst. Prof. of Biology; Immunologist, Agr. Exp. Sta. (1991). BS 1982, Emporia St. U.; PhD 1987, U. of Kansas. (*)

MURRAY, THOMAS E., Prof. of English (1988). BA 1978, U. of Missouri, St. Louis; MA 1980, PhD 1982, Indiana U. (*)

MURRAY–ROSS, CARMIN, Dir. for Employee Relations for Admin. and Finance (1993). BA 1985, JD 1988, Ohio St. U.

MUSCH, TIMOTHY I., Prof., Kinesiology (1993). BA 1972, MA 1974, U. of Calif.–Berkeley; PhD 1981, U. of Wisconsin–Madison. (*)

MUSICK, DOUGLAS C., Co. Ext. Agent, Agriculture, Pottawatomie Co., Westmoreland (1994). BS 1991, MS 1993, Kansas St. U.

MUTHUKRISHNAN, SUBBARATNAM, Prof. of Biochemistry; Assoc. Biochemist, Agr. Exp. Sta. (1980). BSc 1963, MSc 1965, Madras; PhD 1970, Indian Inst. of Sci. (*)

NAFZIGER, ESTEL WAYNE, Prof. of Economics (1966). BA 1960, Goshen Col.; MA 1962, U. of Michigan; PhD 1967, U. of Illinois. (*)

NAGARAJA, TIRUVOOR G., Prof. of Animal Sciences and Industry; Dairy Cattle Research Nutritionist, Agr. Exp. Sta. (1980). BS 1970, MS 1972, U. of Agric. Sci., India; PhD 1977, Kansas St. U. (*)

NAGY, GABRIEL, Assoc. Prof. of Mathematics (1992). PhD 1992, U. of California–Berkeley.(*)

NAJJAR, YACOUB, Assoc. Prof. of Civil Engineering (1993). BS 1983, Yarmouk U.; MS 1986, PhD 1990, U. of Oklahoma. (*)

NAPLES, DONNA, Asst. Prof. of Physics (1995). BS 1985, U. of Pittsburgh; PhD 1993, U. of Maryland. (*)

NAUGHTON, GARY G., Prof. Emeritus of Forestry, District Forester, Northeast (1966). BS 1959, Utah St. U.; MS 1969, U. of Missouri; LLB 1972, LaSalle U.

NAVARETTE, LORI, Asst. Prof., Education (1993). BA 1984, MA 1985, PhD 1992, U. of New Mexico.

NEAL, MARCUS L., Co. Ext. Agent, Harper Co., Anthony (1997). BS 1971, Kansas St. U.; BA 1997, Southwestern Col.

NEAL, MARGARET A., Co. Ext. Agent Emeritus, Family and Consumer Sciences, Cowley Co., Winfield (1977). BS 1967, MS, Kansas St. U.

NECHOLS, JAMES R., Prof. of Entomology, Biological Control, Horticultural Entomology (1984). BS 1973, Baldwin–Wallace Col.; MS 1977, PhD 1980, Cornell U. (*)

NEEDHAM, HAROLD V., Research Asst. of Physics (1985). BS 1982, MS 1984, Kansas St. U.

NEELLY, MARGERY A., Prof., Education (1974). AB 1955, Southwest Missouri St. U.; MEd 1968, PhD 1971, U. of Missouri, Columbia. (*)

NEIER, ROBERT I., Co. Ext. Agent, Hort., Sedgwick Co., Wichita (1979). BS 1979, MS 1988, Kansas St. U.

NEILL, JAMES W., Assoc. Prof. of Statistics; Statistical Consultant, Agr. Exp. Sta. (1986). BS 1971, Eastern Illinois U.; MS 1973, U. of Missouri–Rolla; PhD 1982, Kansas St. U. (*)

NEILS, KENNETH E., Asst. Agricultural Economist, Agricultural Economics; Grain Marketing Specialist (1988). BS 1972, St. Olaf Col., Minnesota; MS 1983, U. of Maryland; PhD 1989, Texas A&M U.

NEILSEN, MITCHELL L., Asst. Prof. of Computing and Information Sciences (1996). MS 1988, MS 1989, PhD 1992,Kansas St. U.

NELSEN, CHERI D., Co. Ext. Agent, Agr., Wilson Co., Fredonia (1993). BS 1990, Oklahoma St. U.

NELSON, BONNIE A., Assoc. Prof. of English (1983). BA 1965, City Col. of New York; MAT 1967, City U. of New York; PhD 1981, Pennsylvania St. U. (*)

NELSON, LORI K., Co. Ext. Agent, 4–H Youth Programs, Butler Co., El Dorado (1997). BS 1997, Kansas St. U.

NELSON, LYELL, Research Asst. of Animal Sciences and Industry (1989). BS 1984, Kansas St. U.

NELSON, NANCY E., Co. Ext. Agent, Jackson Co., Holton (1978). BS 1977, Kansas St. U.

NELSON, PAUL I., Prof. of Statistics (1983). BS 1963, Queens Col., City U., New York; MS 1965, PhD 1969, Rutgers U. (*)

NELSON, PEGGY B., Instr. of Speech (1984). BA 1974, St. Olaf Col.; MA 1982, Kansas St. U.

NELSON, RICHARD G., Asst. Prof.; Ext. Specialist, Energy (1989). BS 1981, MS 1982, PhD 1989, Oklahoma St. U.

NELSON, ROSS M., Co. Ext. Agricultural Agent Emeritus, Ellis Co., Hays (1957). BS 1957, Kansas St. U.

NELSON, THAYER (Gene) E., Assoc. Student Health Physician, Lafene Health Ctr. (1991). MD 1968, U. of Kansas.

NELSON, WILLARD J., Instr. Emeritus, Education (1971). AA 1952, Luther Jr. Col.; BA 1954, Bethany Col.; MS 1976, Kansas St. U.

NELSSEN, JIM L., Prof. of Animal Sciences and Industry; Ext. Specialist, Swine (1983). BS 1978, MS 1980, Kansas St. U.; PhD 1983, U. of Nebraska. (*)

NEMECEK, CARLA S., Co. Ext. Agent, Ag, Haskell Co., Sublette (1997). BS 1996, Kansas St. U.

NESMITH, DWIGHT ALVIN, Assoc. Prof. Emeritus of Mechanical and Nuclear Engineering (1948). BS 1948, Northwestern U.; MS 1952, Kansas St. U.; Professional Engineer, 1962.

NETSON, MICHELLE, Asst. Dietitian, Housing and Dining Services (1995). BS 1976, Kansas St. U.

NEUFELD, DOROTHY H., Prof. Emerita; Area Ext. Home Economist (1957). BS 1950, Texas Technological Col.; MS 1964, Kansas St. U.

NEUSCHWANDER, OCIE A., Co. Ext. Home Economist Emerita, Greeley Co., Tribune (1958). BS 1943, Kansas St. U.

NEWBY, FRANCES ANN, Asst. Prof. Emerita of Clothing, Textiles, and Interior Design (1963). BFA 1961, Kansas City Art Inst.; MArch 1970, Kansas St. U.

NEWCOMB, WARD M., Adjunct Clinical Assoc. of Medical Tech. (1995). BS 1971, MD 1971, U. of Nebraska.

NEWCOMER, GLENN A., Co. Ext. Agent, Agr., Bourbon Co., Fort Scott (1965). BS 1965, Kansas St. U.

NEWDIGGER, GLENN E., Co. Ext. Agent, Barber Co., Medicine Lodge (1988). BS 1986, Kansas St. U.

NEWELL, KATHLEEN, Prof. Emerita of Foods and Nutrition; Agr. Exp. Sta. (1962). BS 1944, Kansas St. U.; MS 1951, U. of Wisconsin; PhD 1973, U. of Tennessee. (*)

NEWHOUSE, BARBARA S., Assoc. Dir. , Academic Programs, Kansas Regents Educational Communications Cntr.; Asst. Prof., Education (1974). BS 1967, Western Michigan U.; MS 1974, PhD 1985, Kansas St. U.

NEWHOUSE, ROBERT C., Prof. of Education, Education (1972). BS 1967, MA 1969, Western Michigan U.; PhD 1972, U. of Oregon. (*)

NEWSOME, BOB W., Prof. Emeritus; Area Ext. Dir. (1955). BS 1951, Oklahoma St. U.; MS 1962, Kansas St. U.; EdD 1965, Oklahoma St. U.

NEWTON, FRED B., Dir. of U. Counseling Services; Prof., Education (1980). BA 1965, Muskingum Col., Ohio; MA 1967, Ohio St. U.; PhD 1972, U. of Missouri–Columbia. (*)

NGUYEN, DAN, Asst. Specialist, Libraries (1991). BS 1991, Wichita St. U.

NICHOLLS, PETER J., Dean of Arts and Sciences and Prof. of Mathematics (1991). BSc Hons., 1967, London U., England; PhD 1970, Cambridge U., England. (*)

NICHOLS, DAVID A., Prof. of Animal Sciences and Industry (1981). BS 1976, Purdue U.; MS 1979, PhD 1981, Kansas St. U.

NICHOLS, JENNIFER R., Co. Ext. Agent, Ag, Dickinson Co., Abilene (1996). BS 1994, Kansas St. U.; MS 1996, South Dakota St. U.

NICHOLS, MARY, Instr. of Speech (1975). BS 1967, Iowa St. U.; MA 1974, Kansas St. U.

NICHOLSON, CASSANDRA, Student Services Coord., Upward Bound Program (1994). BA 1991, MS 1994, Kansas St. U.

NICHOLSON, ROBERT A., Prof. Biological Science (Range Research), Fort Hays St. U. (1973). BS 1967, MS 1968, Fort Hays St. U.; PhD 1972, Colorado St. U. Adjunct appt.

NICKEL, DUANE F., Assoc. Projects Manager, Computing and Telecommunications Activities (1970). BS 1967, Kansas St. U.

NIEHOFF, BRIAN P., Assoc. Prof. of Management (1988). BS 1977, St. Joseph's Col.; MBA 1986, PhD 1988, Indiana U. (*)

NIELSON, DIANE A., Co. Ext. Agent, Atchison Co., Effingham (1984). BS 1981, Northwest Missouri St. U.

NIETFELD, JEROME, Asst. Prof., Diagnostic Pathology (1993). DVM 1979, Kansas St. U.; MS 1987, PhD 1989, U. of Georgia. (*)

NIGHSWONGER, JAMES J., Prof. Emeritus of Forestry; Urban and Community Forestry Program Leader (1961). BS 1960, MLA 1970, Kansas St. U.

NIKKEL, JANICE, Conference Coord. (1985). BS 1985, Kansas St. U.

NOBLE, M. LARRY, Prof. of Kinesiology (1972). BS 1966, Eastern Kentucky U.; MS 1968, U. of Maryland; PhD 1970, U. of Texas. (*)

NOBLE, WILLIAM D., Asst. Prof. of Statistics (1991). BA 1977, U. of California–Berkeley; MS 1981, U. of Missouri–Rolla; PhD 1991, Michigan St. U.

NOBLETT, DUANE P., Assoc. Prof. of Art (1973). BFA 1966, Minneapolis Col. of Art and Design; MA 1970, MFA 1972, U. of Iowa. (*)

NOONAN, JOHN P., Assoc. Dean Emeritus of Grad. School; Prof. of English (1947). BS 1947, Rockhurst Col.; MS 1950, Kansas St. U.; PhD 1955, Denver U. (*)

NOORDSY, JOHN L., Prof. Emeritus of Surgery (1960). BS 1943, S. Dakota St. Col.; DVM 1946, MS 1962, Kansas St. U. (*)

NORBY, OSCAR W., Prof. Emeritus; Asst. Dir., Community Resource Dev. (1942). BS 1942, Kansas St. U.; MS 1959, PhD 1961, U. of Wisconsin. (*)

NORDIN, PHILIP, Prof. Emeritus of Biochemistry (1954). BS 1949, MS 1950, U. of Saskatchewan, Canada; PhD 1953, Iowa St. U. (*)

NORHEIM, TORGEIR, Asst. Prof. of Arch. (1992). BS 1978, MArch 1978, Calif. Poly.

NORMAN, DAVID W., Prof. of Agricultural Economics; Research Agr. Econ., International Agr. Dev., Agr. Exp. Sta. (1968). BS 1961, Wye Col.; MS 1963, PhD 1965, Oregon St. U. (*)

NORRIS, TIM, Head Men's Golf Coach (1997). BS 1991, U. of Texas–El Paso.

NORRIS–BAKER, CAROLYN, Prof. of Arch.; Dir. KSU Cntr. for Aging (1982). BA 1971, BArch 1972, Rice U.; MA 1978, PhD 1980, U. of Houston. (*)

NORTON, CHARLES L., Prof. Emeritus, Animal Sciences and Industry; Research Dairy Scientist, Agr. Exp. Sta. (1958). BS 1940, U. of Illinois; PhD 1944, Cornell U. (*)

NORTH, BILL, Curator, Beach Museum of Art (1995). BGS 1988, MA 1990, U. of Kansas.

NORWOOD, CHARLES A., Assoc. Prof.; Research Agronomist, Dryland Soils, SW Research–Ext. Cntr. (1972). BS 1961, Texas A&I; MS 1969, PhD 1971, Oklahoma St. U.

NOVONTY, ROBERT, Asst. Women's Tennis Coach (1997). BS 1997, Drake U.

NYBERG, BENJAMIN M., Prof. Emeritus of English (1965). BA 1955, U. of Wichita; MA 1958, U. of Arizona; PhD 1965, U. of Colorado. (*)

NYHART, SYLVESTER, Co. Ext. Agent, Agr., Leavenworth Co., Leavenworth (1958). BS 1959, MS 1972, Kansas St. U.

OAKLEY, THOMAS R., Research Asst. of Plant Pathology (1990). BS 1988, Kansas St. U.

OAKLIEF, CHARLES R., Prof., Education (1974). BS 1959, MS 1962, Ohio St. U.; PhD 1970, Wisconsin St. U. and Ohio St. U. (*)

OARD, DARRELL L., Research Asst. of Biological and Agricultural Engineering (1972). BS 1968, Emporia St. U.

OBERST, RICHARD D., Assoc. Prof. of Pathology and Molecular Biology (1987). DVM 1983, Oklahoma St. U.; PhD 1987, U. of California. (*)

OBERT, DONALD E., Research Asst. of Plant Pathology (1992). BS 1990, Northeast Missouri St.; MS 1992, U. of Arkansas.

O'BRIEN, MIKE, Assoc. Athletics Dir./Development (1997). BS 1975, Missouri Valley Col.; MS 1982, U. of Wisconsin–River Falls; MS 1986, Western Illinois U.

O'BRIEN, DANIEL, Asst. Prof. of Agricultural Economics; Ext. Agricultural Economist, Northwest (1995). BS 1978, MS 1980, U. of Nebraska; PhD 1993, Iowa St. U.

O'BRIEN, PATRICIA J., Prof. Emeritus of Anthropology (1967). BA 1962, BMA 1966, PhD 1969, U. of Illinois. (*)

O'CONNER, NANCY T., Dir. of Marriage and Family Therapy Clinic; Instr.of Family Studies and Human Services (1990). BA 1981, St. Bonaventure U.; MS 1985, Kansas St. U.

O'DEA, DYNA, Medical Technologist, Lafene Health Ctr. (1978). BS 1978, Kansas St. U.

ODLE, MARY LOU., Co. Ext. Agent, Family and Consumer Sciences, Saline Co., Salina (1970). BS 1970, Fort Hays St. U.; MS 1981, Kansas St. U.

OEHME, FREDERICK W., Prof of Toxicology, Medicine, and Physiology; Research Toxicologist (1959). BS 1957, DVM 1958, Cornell U.; MS 1962, Kansas St. U.; DMV 1964, Justus Liebig U.; Diplomate 1968, American Board of Vet. Toxicology; PhD 1969, U. of Missouri; Diplomate 1980, American Board of Toxicology; Diplomate 1982, Acad. of Toxicological Sciences. (*)

OGG, ROSELLA A., Asst. Prof. of Art (1965). BA 1958, MA 1963, Kansas St. U.

OHLENBUSCH, PAUL D., Prof. of Agronomy; Ext. Specialist, Range and Pasture Management (1975). BS 1963, S.W. Texas St.; MS 1965, PhD 1975, Texas A&M.

OHLSEN, ROBERT L., Assoc. Prof. Emeritus, Education (1976). BA 1952, Ottawa U.; ME 1957, Wichita U.; EdD 1963, U. of Kansas. (*)

OHNO, MITSUGI, Asst. Instr. Emeritus of Chemistry (1960).

OKOT-KOTBER, MOSES, Asst. Prof. of Grain Science and Industry (1997). BS/MSc 1973, Moscow St. U.; PhD 1979, U. of Dijon.

OLDFATHER, MICHAEL, Assoc. Prof. of Economics (1983). BA 1962, Oberlin Col.; MA 1969, U. of Nebraska–Lincoln; PhD 1980, Ohio U.

OLDHAM, BELINDA K., Co. Ext. Agent, Family and Consumer Sciences, Wichita Co., Leoti (1989). BS 1974, Kansas St. U.

OLSEN, CHARLOTTE SHOUP, Asst. Prof. of Family Studies and Human Services (1981). BS 1969, MS 1979, PhD 1993, Kansas St. U.

OLSON, EDWIN G., Assoc. Prof. of Economics (1968); BA 1956, MA 1960, U. of California; PhD 1971, U. of Washington. (*)

OLSON, CAROLYN, Adjunct Asst. Prof. of Agronomy (1992). BS 1974, Syracuse U.; MA 1977, PhD 1979, Indiana U. (*)

OLSON, JERALD E., Co. Ext. Agent, 4–H, Lyon Co., Emporia (1989). BS 1983, Kansas St. U.

OLSON, KENNETH C., Assoc. Prof. Range Research, Fort Hays Branch Agr. Exp. Sta. (1986). BS 1978, MS 1982, Montana St. U.; PhD 1986, Utah St. U. (*)

OLSON, WILLARD G., Ext. Asst. Emeritus, Live Animal Evaluations (1977). BS 1970, Kansas St. U.

O'MARA, JUDITH L., Instr. of Plant Pathology; Ext. Diagnostician (1989). BS 1984, MS 1987, New Mexico St. U.

O'NEILL, CAROL, Math Skills Specialist, Academic Assistance Cntr.; Instr. of Mathematics (1982). BS 1960, MS 1967, PhD 1995, Kansas St. U.

OPHEIM, ALICIA, Asst. Prof. Emeritas of Modern Languages (1983). PhD 1979, Kansas St. U.

OPPERUD, SARA, Computer Information Specialist, Educational and Personal Dev. Programs (1985). BA 1983, BBA 1983, Washburn U.

ORAZEM, FRANK, Prof. Emeritus of Agricultural Economics; Research Agr. Econ., Production Economics; Regional and Community Dev., Agr. Exp. Sta. (1956). Cand. Rer. Pol., Dr. Rer. Pol., 1949, Karl Franzens U., Graz, Austria; MS 1953, Kansas St. U.; PhD 1956, Iowa St. U. (*)

ORBACH, HAROLD L., Assoc. Prof. of Sociology (1969). BS 1951, The City Col. of New York; PhD 1974, The U. of Minnesota. (*)

ORLOCK, VERA A., Asst. Prof. of Dance (1993). BS 1973, MFA 1978, Case Western Reserve.

ORNELAS, WENDY, Assoc. Prof. of Arch. (1989). BSArch 1980 Cal. Poly. U.; MArch 1989, Oklahoma St. U. Registered Architect.

OROPESA, SALVADOR A., Assoc. Prof. of Modern Languages (1992). BA 1982, MA 1984, Universidad de Granada; PhD 1990, Arizona St. U. (*)

ORR, V. BRYCE, Co. Ext. Agricultural Agent Emeritus, Sedgwick Co., Wichita (1952). BS 1952, Kansas St. U.

ORTIZ, J. VINCENT, Prof. of Chemistry (1997). BS 1976, PhD 1981, U. of Florida. (*)

O'SHEA, JOHN WILLIAM, Asst. Prof. Emeritus of Art (1956). BFA 1954, Denver U.; MFA 1956, St. U. of Iowa. (*)

O'SHEA, MICHAEL J., Assoc. Prof. of Physics (1983). BA 1977, U. of East Anglia, England; PhD 1980, U. of Sussex, England. (*)

OSSAR, MICHAEL, Prof. of Modern Languages (1971). AB 1961, Cornell U.; MS 1963, MA 1967, PhD 1973, U. of Pennsylvania. (*)

OSSAR, NAOMI, Instr., English Language Program (1990). BA 1962, Brown U.; MA 1983, PhD 1989, Kansas St. U.

OTT, RICHARD L., Assoc. Prof. of Accounting (1986). BA 1969, U. of St. Thomas; MBA 1980, U. of Houston at Clear Lake City; MAcc 1982, PhD 1986, Texas Tech U.; CPA 1989, Kansas. (*)

OTTE, CHARLES E., Co. Ext. Agent, Geary Co., Junction City (1982). BS 1979, MS 1981, U. of Nebraska.

OTTE, ERIC T., Co. Ext. Agent, 4–H Youth, Sedgwick Co. (1982). BS 1969, MS 1975, U. of Nebraska.

OTTENHEIMER, HARRIET J., Prof. of Anthropology (1969). BA 1962, Bennington Col.; PhD 1973, Tulane U. (*)

OTTENHEIMER, MARTIN, Prof. of Anthropology (1969). BA 1962, Rensselaer Polytechnic Inst.; MA 1964, PhD 1971, Tulane U. (*)

OUKROP, CAROL E., Prof. of Journalism and Mass Communications (1969). BA 1956, U. of N. Dakota; MA 1965, PhD 1969, U. of Iowa. (*)

OVERLEY, CARL BENJAMIN, Assoc. Prof. Emeritus of Agronomy (1946). BS 1946, Kansas St. U.; MS 1967, U. of Nebraska.

OVERLEY, FRANK L., Asst. Prof. Emeritus; Ext. Economist, Northwest (1960). BS 1950, Kansas St. U.; MS 1957, Michigan St. U.

OVERLEY, VICKY I., Co. Ext. Agent, Family and Consumer Sciences, Phillips Co., Phillipsburg (1979). BS 1966, Fort Hays St. U.

OVIATT, CHARLES G., Assoc. Prof. and Head of Geology (1985). BS 1973, MS 1977, U. of Wyoming; PhD 1984, U. of Utah. (*)

OWENS–WILSON, GWEN, Assoc. Prof. of Interior Arch. (1982). BA 1959, U. of Oklahoma; BArch 1972, Howard U.; MS 1980, PhD 1982, U. of Tennessee; Registered Architect. (*)

OWENSBY, CLENTON E., Prof. of Agronomy; Range Management Research Agronomist, Agr. Exp. Sta. (1964). BS 1964, New Mexico St. U.; PhD 1969, Kansas St. U. (*)

PACE, DAVID W., Co. Ext. Agent, Agr., Lyon Co., Emporia (1983). BS 1973, MS 1982, Oklahoma St. U.

PACEY, CAROL A., Inst. of Biology (1988). BS 1974, MS 1985, Kansas St. U.

PACEY, DAVID A., Assoc. Prof. of Mechanical and Nuclear Engineering (1978). BS 1974, MS 1979, PhD 1989, Kansas St. U.; Professional Engineer, 1981. (*)

PACHECO, ALISON J., Instr. of Architectural Engineering and Construction Science (1996). BS 1991, Kansas St. U.

PADY, STUART McGREGOR, Prof. Emeritus of Biology; Mycologist, Agr. Exp. Sta. (1945). AB 1928, MA 1929, McMaster U.; PhD 1933, U. of Toronto. (*)

PAGE, KEVIN, Dir. of Academic Affairs, Athletics (1996). BS 1988, MS 1990, PhD 1994, Kansas St. U.

PAGE, LEROY EARL, Assoc. Prof. Emeritus of History (1969). BS 1951, U. of Arkansas; BS 1955, MChemEng 1958, PhD 1963, U. of Oklahoma. (*)

PAGE, ROBERT L., Prof. of Landscape Arch. (1971). BSLA 1963, Kansas St. U.; MLA 1965, Harvard U.; Registered Landscape Architect. (*)

PAGELL, MARK D., Asst. Prof. of Management (1998). BS 1991, Drexel U.; PhD 1997, Michigan St. U.

PAHWA, ANIL, Prof. of Electrical and Computer Engineering (1983). BS 1975, Birla Inst. of Tech.; MS 1979, U. of Maine; PhD 1983, Texas A&M. (*)

PAIR, JOHN C., Prof. of Hort.; Research Horticulturist in Charge, Hort. Research Cntr.–Wichita, Agr. Exp. Sta. (1971). BS 1959, New Mexico St. U.; MS 1961, PhD 1971, Kansas St. U. (*)

PALLETT, WILLIAM H., Dir. of Educational Advancement (1982). BA 1971, Doane Col.; MA 1975, U. of Nebraska; PhD 1984, Kansas St. U.

PALMER, RACHEL F., Co. Ext. Home Economist, Emerita, Sedgwick Co., Wichita (1941). BS 1941, Kansas St. U.

PARDUN, CAROL J., Asst. Prof. of Journalism and Mass Communications (1992). BA 1977, MA 1988, Wheaton Col.; PhD 1992, U. of Georgia. (*)

PARILLO, MARK P., Assoc. Prof of History. BA 1978, Notre Dame U.; MA 1981, PhD 1987, Ohio State U. (*)

PARISH, THOMAS S., Prof., Education (1976). BA 1968, Northern Illinois U.; MA 1969, Illinois St. U.; PhD 1972, U. of Illinois. (*)

PARKER, C. ELBURN, Research Asst. of Plant Pathology (1981). USDA.

PARKER, CRAIG B., Assoc. Prof. of Music (1983). BM 1973, U. of Georgia; MM 1976, PhD 1981, U. of California–Los Angeles. (*)

PARKER, LEONARD C., Prof. Emeritus; Administrator, Farm Management Association Program (1956). BS 1952, MS 1967, Kansas St. U.

PARKER, WILLARD A., Assoc. Prof. Emeritus of Mathematics (1970). BA 1960, U. of Oregon; MDiv 1964, Fuller Theological Seminary; MA 1966, PhD 1970, U. of Oregon. (*)

PARKS, JULIE A., Co. Ext. Agent, 4–H, Wyandotte Co., Kansas City (1989). BS 1989 Kansas St. U.

PARMLEY, DIANNA L., Academic Outreach Coord. (1989). BS 1975, Southwestern Col.; MS 1976, PhD 1990, Kansas St. U.

PARMLEY, JOHN D., Assoc. Prof., Education (1980). BS 1968, MEd 1974, Colorado St. U.; PhD 1980, Ohio St. U. (*)

PARRISH, DONALD B., Prof. Emeritus of Biochemistry, Agr. Exp. Sta. (1943). BS 1935, MS 1938, PhD 1949, Kansas St. U. (*)

PARSONS, KRISTINA A., Co. Ext. Agent, Family and Consumer Sciences, Trego Co., WaKeeney (1996). BS 1993, Ft. Hays St. U.

PARSONS, PAUL F., Prof. of Journalism and Mass Communications (1985). BA 1974, Baylor U.; MA 1983, U. of Arkansas at Little Rock; PhD 1987, U. of Tennessee. (*)

PASCHAL, JOANN A., Co. Ext. Agent, Family and Consumer Sciences, Russell Co., Russell (1976). BS 1976, Kansas St. U.

PATTEE, SHERRILL, Information Specialist; Research and Sponsored Programs (1992). BS 1981, Kansas St. U.; MLS 1989, U. of Washington.

PATTERSON, DEBRA L., Head Women's Basketball Coach (1996). BS 1979, Rockford Col.

PATTON, DENNIS L., Co. Ext. Agent, Hort. and 4–H, Johnson Co., Olathe (1983). BS 1982, MS 1989, Kansas St. U.

PAUKSTELIS, JOSEPH V., Prof. of Chemistry (1966). BS 1960, U. of Wisconsin; PhD 1964, U. of Illinois. (*)

PAUL, BIMAL K., Assoc. Prof. of Geography (1990). BS 1970, MS 1973, U. of Dhaka; MA 1980, U. of Waterloo; PhD 1988, Kent State U. (*)

PAUL, ROBERT J., Prof. of Management (1978). BBA 1954, U. of Wisconsin; MS 1962, Oklahoma St. U.; PhD 1966, U. of Arkansas. (*)

PAULI, ROSS IRWIN, Asst. Prof. Emeritus of Mechanical and Nuclear Engineering (1947). BA 1941, Westmar Col.; MS 1947, Pittsburg St. U.

PAULSEN, GARY M., Prof. of Agronomy; Crops Research Physiologist, Agr. Exp. Sta. (1965). BS 1961, MS 1963, PhD 1965, U. of Wisconsin. (*)

PAULSEN, AVELINA Q., Instr. of Biology (1974). BS 1959, MS 1962, U. of Philippines; PhD 1967, U. of Wisconsin. (*)

PAZ, REBECA, Asst. Dir., Career and Employment Services (1997). BS 1986, The Col. of the Ozarks; MS 1988, Southwest Missouri St. U.

PEARCE, R. CHARLES, Assoc. Prof. of Journalism and Mass Communications (1986). BFA 1972, MA 1975, U. of Alabama; PhD 1984, U. of Tennessee. (*)

PECAR, MARINA, Asst. Prof. of Arch. (1989). Eng. of Arch 1980, U. of Sarajevo, Yugoslavia.

PECK, ERNEST G., Assoc. Prof. Emeritus; Communications Instructional Media Specialist (1955). BS 1950, MS 1965, Kansas St. U.

PEDERSEN, JOHN R., Prof. Emeritus of Grain Science and Industry; Stored Grain Research Entomologist, Agr. Exp. Sta. (1968). BS 1954, MS 1959, PhD 1979, Kansas St. U.

PELLETIER, LAWRENCE JR., Adjunct Asst. Prof. of Dietetics (1985). BA 1964, Bowdoin Col.; MD 1968, Columbia U.

PELLER, VLADIMIR, Prof. of Mathematics (1993). PhD 1975, Leningrad U.; DSc 1985, Steklov Inst. of Mathematics. (*)

PELLETIER, PAUL, Asst. Prof. Emeritus (1989). BA 1949, Sacred Heart Seminary; STL 1953, Gregorian U.; MSW 1958, Catholic U. of America.

PELTON, MARION HERFORT, Assoc. Prof. Emerita of Music (1928). BM 1927, U. of Wisconsin; BS 1932, Kansas St. U.; MA 1957, Columbia U. (*)

PENCE, JOHN T., Assoc. Dir. of Housing and Dining Services; Dietitian; Instr. (1963). BS 1963, Purdue U.; MS 1970, Kansas St. U.

PENCE, KAREN T., Asst. Dean and Instr. of Human Ecology (1977). BSE 1971, Emporia St. U.; MS 1972, Kansas St. U.

PENNER, KAREN P., Prof. of Animal Sciences and Industry; Extension Specialist, Animal Sciences and Industry, Food Science (1973). BS 1971, MS 1972, Kansas St. U.; PhD 1981, Michigan St. U. (*)

PERCHELLET, JEAN-PIERRE H., Prof. of Biology (1982). BS 1968, MS 1970, PhD 1974, Faculty and Sciences, U. of Paris VI. (*)

PERKINS, CHARLES C., JR., Prof. Emeritus of Psychology (1969). BA 1941, Harvard; MA 1942, PhD 1946, St. U. of Iowa. (*)

PERKINS, SHELBY S., Co. Ext. Agent, Family and Consumer Sciences, Elk Co., Howard and Chautauqua Co., Sedan (1986). BS 1981, Kansas St. U.

PERL, MICHAEL F., Assoc. Prof., Education (1976). BA 1966, St. Mary's Col., Minnesota; MS 1970, Winona St. Col., Minnesota; PhD 1976, U. of South Carolina. (*)

PERNG, SHIAN-KOONG, Prof. Emeritus of Statistics (1968). BS 1954, Chung-Hsien U., Taiwan; MS 1961, Virginia Poly. Inst.; PhD 1967, Michigan St. U. (*)

PERNG, JONG-I., Research Asst. of Agricultural Economics (1976). BS 1960, Taiwan; MS 1964, U. of New Hampshire.

PESCI, PATRICK, Instr., Hotel, Restaurant, Institution Management and Dietetics (1975). BS 1973, Indiana U. of Pennsylvania; MS 1981, Kansas St. U.

PETERS, CHESTER E., Prof. and VP Emeritus for Student Affairs (1947). BS 1947, MS 1950, Kansas St. U.; PhD 1953, U. of Wisconsin.

PETERS, PAULA K., Assoc. Prof. of Foods and Nutrition; Ext. Specialist, Nutrition (1990). BS 1977, MS 1985, S. Dakota St. U.; PhD 1990, Ohio St. U.

PETERSON, DALLAS E., Prof. of Agronomy; Ext. Specialist, Weed Science (1989). BS 1981, MS 1983, Kansas St. U.; PhD 1987, N. Dakota St. U. (*)

PETERSON, EDMUND J., Admin. Asst. Emeritus and Asst. to the Dir., Business and Finance (1966). BS 1959, Kansas St. U.

PETERSON, GREG E., Asst. Football Coach (1995). BS 1984, Nebraska Wesleyan U.; MS 1991, Oregon St. U.

PETERSON, MARY DON, Assoc. Prof. Emeritus of Clothing, Textiles, and Interior Design (1968). BS 1958, MS 1959, U. of Tennessee; EdD 1975, Oklahoma St. U. (*)

PETERSON, NANCY B., Assoc. Communications Specialist, Communications (1996). BS 1965, Purdue U.

PETERSON, SUSAN, Asst. to the President for Governmental Relations (1989). BS 1976, Kansas St. U.; MA 1982, U. of Kansas.

PETRACEK, MARIAN H., Co. Ext. Home Economist Emerita, Barton Co., Great Bend (1953). BS 1928, Kansas St. U.

PETTIJOHN, LINDA K., Co. Ext. Agent Emerita, Family and Consumer Sciences and Hort., McPherson Co., McPherson (1971). BS 1965, MS 1969, Kansas St. U.

PFEIFER, MATTHEW L., Co. Ext. Agent, Agriculture, Ellsworth Co., Ellsworth (1995). BS 1994, U. of Nebraska.

PHARES, E. JERRY, Prof. Emeritus of Psychology (1955). BA 1951, U. of Cincinnati; MA 1953, PhD 1955, Ohio St. U. (*)

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PHILLIPS, RICHARD, Prof. Emeritus of Agricultural Economics; Research Agr. Econ., International Agr. Dev., Agr. Exp. Sta. (1970). BS 1948, MS 1949, PhD 1952, Iowa St. U. (*)

PHILLIPS, ROBERT M., Prof. Emeritus of Veterinary Diagnostic Investigation; Research Virologist (1975). DVM 1951, Kansas St. U.; PhD 1972, U. of Georgia. (*)

PHILLIPS, WILLIAM M., Prof. Emeritus; Head, Fort Hays Branch Agr. Exp. Sta.; Research Agronomist, Weed Control, (1952). BS 1947, MS 1949, Kansas St. U.

PICKAR, JOEL, Asst. Prof., Cell Physiology (1993). BA 1973, Brown U.; DC 1977, Palmer Co. of Chiropractic; PhD 1990, U. of Calif.–Davis. (*)

PICKERING, JEFFREY J., Asst. Prof. of Political Science (1997). BA 1990, PhD 1995, Indiana U.

PICKRELL, JOHN A., Assoc. Prof. of Toxicology (1988). DVM 1965; PhD 1968, U. of Illinois–Urbana; Diplomate 1983, American Board of Toxicology. (*)

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PIGNO, ANTONIA, Instr. of Modern Languages (1975). BA 1968, SUNY at Stony Brook; MA 1971, Kansas St. U.

PIGNO, LOUIS, Head and Prof. of Mathematics (1969). BS 1961, Poly. Inst. of Brooklyn; MA 1965, U. of Connecticut; PhD 1969, SUNY at Stony Brook. (*)

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PINKERTON, LESTER R., Prof. Emeritus of Forestry; Forest Management Program Leader (1964). BS 1964, MS 1967, Colorado St. U.

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PITTENGER, THAD H., Prof. Emeritus of Biology (1959). BS 1947, PhD 1951, U. of Nebraska. (*)

PITTS, BERNARD J., Dir., K-State Student Union (1995). BS 1971, Southern Illinois U.; MS 1975, Oregon St. U.

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POLICH, GERALD, Assoc. Prof. of Music (1966). BME 1961, MME 1966, U. of Colorado. (*)

POLSON, CHERYL J., Assoc. Prof., Education (1976). BS 1976, MS 1978, PhD 1983, Kansas St. U. (*)

POND, L. KRISTINE, Asst. Prof. of Speech (1997). BA 1978, Taylor U.; MA 1984, Purdue U.; PhD 1994, U. of Iowa.

PONTE, JOSEPH G., Prof. Emeritus of Grain Science and Industry; Baking Tech. Research Scientist, Agr. Exp. Sta. (1975). AB 1956, Northwestern U.; MS 1958, U. of Minnesota.

PONTIUS, JEFFREY S., Asst. Prof. of Statistics; Statistical Consultant, Agr. Exp. Sta. (1995). BA 1976, Millersville U. of Pennsylvania; MS 1987, Kansas St. U.; PhD 1994, U. of Wyoming. (*)

POOLE, DAVID C., Assoc. Prof. of Kinesiology (1995). BS 1980, Liverpool Polytechnic, England; MS 1984, PhD 1986, U. of California–Los Angeles. (*)

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PRICE, FLOYD HAMILTON, Prof. Emeritus, Education (1963). AB 1951, Friends U.; MEd 1957, Wichita St. U.; EdS 1960, George Peabody Col.; EdD 1965, U. of Oklahoma. (*)

PRICE, MARY GAYLE, Assoc. Prof.; Ext. Spec., Family and Consumer Sciences, Southeast (1989). BS 1981, Oklahoma St. U.; MS 1989, Pittsburg St. U.

PRINCE, J. BRUCE, Head and Assoc. Prof. of Management (1995). BS 1973 Utah St. U.; MA 1977 Brigham U.; PhD 1984, U. of Southern California. (*)

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RAINBOLT, HARRY R., Assoc. Prof. of Family Studies and Human Services (1966). BS 1960, Southern Illinois U.; MS 1962, PhD 1965, U. of Indiana. (*)

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RAPPOPORT, LEON H., Prof. of Psychology (1964). BA 1953, New York U.; MA 1962, PhD 1963, U. of Colorado. (*)

RATCLIFFE, LAMAR CECIL, Instr. Emeritus of Mathematics (1964). BS 1933, U.S. Military Academy; MAT 1964, Duke U.

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REALS, WILLIAM J., Adjunct Clinical Assoc. of Med. Tech. (1976). BS 1944, MD 1945, MS (Med) 1949, Creighton U.

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REED, CARL, Research Assoc. of Grain Science and Industry (1978). BS 1971, MS 1975, Michigan St. U.; PhD 1987, Kansas St. U. (*)

REED, DAYMIAN D., Co. Ext. Agent, Republic Co., Belleville (1997). BS 1996, Kansas St. U.

REED, ROSELINE R., Assoc. Staff Physician (1995). BS 1986, City College of New York; MD 1991, Temple U.

REES, JOHN O., Prof. Emeritus of English (1965). BA 1947, Amherst Col.; MFA 1957, PhD 1965, U. of Iowa. (*)

REESE, JOHN C., Prof. of Entomology; Research Entomologist, Physiology of Plant–Insect Interactions, Agr. Exp. Sta. (1982). BA 1969, MS 1971, U. of Missouri; PhD 1975, U. of Wisconsin. (*)

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REGEHR, CAROL, Research Assoc. of Physics (1985). BA 1977, Sterling Col.; MS 1985, Kansas St. U.

REGEHR, DAVID, Prof. of Agronomy; Ext. Specialist, Weed Science (1981). BS 1964, MS 1968, PhD 1975, U. of Illinois. (*)

REICHERT, BRUCE A., Assoc. Prof. of Mechanical and Nuclear Engineering (1994). BS 1979, US Naval Academy; MS 1987, PhD 1991, Iowa St. U. (*)

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REINERT, CINDY L., Co. Ext. Agent, Thomas Co., Colby (1994). BS 1984, Ft. Hays St. U.

RELIGA, ANN M., Co. Ext. Agent, 4–H Youth, Harvey Co., Newton (1986). BS 1985, Kansas St. U.

REMPE, DAVID H., Farm Management Association Fieldman (1982). BS 1980, U. of Nebraska.

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REPLOGLE, RENATA J., Asst. Prof. of Art (1966). BA 1963, MA 1964, Northern Colorado U.

REPLOGLE, REX, Assoc. Prof. of Art (1966). BFA 1964, MFA 1967, U. of Kansas. (*)

REPPERT, EARL J., Assoc. Staff Physician (1995). BS 1964, U. of Nebraska; MS 1984, Tulane U. School of Medicine; MD 1968, U. of Nebraska.

RIAT, LARRY D., Co. Ext. Agent Emeritus, Agr., Dickinson Co., Abilene (1961). BS 1961, MS 1969, Kansas St. U.

RIBLETT, CARL O., Assoc. Prof. of Architectural Engineering and Construction Science (1989). BS 1984, Kansas St. U.; MS 1993, Texas A&M

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RICE, CHARLES W., Prof. of Agronomy (1988). BS 1977, Northern Illinois U.; MS 1980, PhD 1983, U. of Kentucky. (*)

RICE, EDWARD D., Dir. of Facilities Management (1987). BS 1972, U. of Nebraska–Omaha.

RICE, FRED, Instr. of Management; Dir. of Small Business Dev. Cntr. (1986), BA 1958, Ohio Wesleyan U.; MBA 1965, U. of Cincinnati.

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RICHARD, PATRICK, Distinguished Prof. of Physics; Dir. of J.R. Macdonald Lab (1972). BS 1961, U. of Southwestern Louisiana; PhD 1964, Florida St. U. (*)

RICHARDS, VERLYN D., Prof. Emeritus of Finance (1965). BS 1956, MS 1960, Kansas St. U.; CPA 1961, Kansas; PhD 1967, U. of Illinois. (*)

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RICHARDSON, DRAYTFORD, Prof. Emeritus of Animal Sciences and Industry (1951). BS 1938, Clemson Agricultural Col.; MS 1950, PhD 1951, Iowa St. U. (*)

RICHMOND, MARY FRANCES, Co. Ext. Agent, Family and Consumer Sciences, Osage Co., Lyndon (1975). BS 1973, Pittsburg St. U.; MS 1981, Kansas St. U.

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RIGGS–ROWLISON, MARILYN J., Co. Ext. Agent, Family and Consumer Sciences, Sheridan Co., Hoxie (1992). BS 1967, Ft. Hays St. U.; MS 1986, Kansas St. U.

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RILEY, MERRILL J., Asst. Prof. Emeritus of Management (1966). BS 1951, John Brown U.; MBA 1955, U. of Arkansas.

RINGLER, WILBER E., Prof. Emeritus; Assoc. Dir. of Ext. (1957). BS 1948, MS 1949, U. of Nebraska; PhD 1958, U. of Wisconsin. (*)

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RUDY, JEFFREY, Instr. of Education (1993). BS 1987, MS 1992, U. of Pittsburg; PhD 1997, Kansas St. U.

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RUSSELL, CANDYCE S., Prof. of Family Studies and Human Services; Agr. Exp. Sta. (1974). BS 1968, Cornell U.; MA 1972, PhD 1975, U. of Minnesota. (*)

RUSSELL, EUGENE R., Prof. of Civil Engineering (1974). BSCE 1958, U. of Missouri, Rolla; MS 1965, Iowa St. U.; PhD 1974, Purdue U.; Professional Engineer, 1962. (*)

RUSSELL, LEROY W., Co. Ext. Agent, 4–H; Shawnee Co., Topeka (1990). BS 1977, MS 1978, Kansas St. U.

RYAN, BRENDAN C., Nuclear Reactor Facility Manager, Department of Mechanical and Nuclear Engineering (1997). BS 1993, Kansas St. U.

RYBA–WHITE, MARIETTA J., Research Asst. of Plant Pathology (1985). BA 1980, U. of Washington.

RYS, ANDREW, Prof. of Electrical and Computer Engineering (1983). BS 1976, MS 1978, Technical U. of Wroclan, Poland; PhD 1983, Texas Tech. U. (*)

RYS, MALGORZATA J., Assoc. Prof. of Industrial and Manufacturing Systems Engineering (1989). BS 1979, MS 1979, Technical U. of Wroclaw; MS 1985, PhD 1989, Kansas St. U. (*)

SABATES, MARCELO H., Asst. Prof. of Philosophy (1996). MA 1992, PhD 1996, Brown U. (*)

SACHS, DAVID H., Assoc. Prof. of Arch. (1988). BS 1974, Stetson U.; MArch 1977, Rice U., DArch 1986, U. of Michigan. Registered Architect. (*)

SADLER, MICHAEL A., Asst. Prof. of Economics (1996). BA 1986, U. of New Mexico; PhD 1997, U. of Texas. (*)

SAEKI, SADAHIRO, Distinguished Prof. of Mathematics (1982). BS 1965, Waseda U.; MS 1967, PhD 1970, Tokyo Met. U., Japan. (*)

SALSBERRY, TRUDY, Assoc. Prof., Education (1992). BS 1975, Greenville Co.; MS 1981, Western Illinois U.; PhD 1989, U. of Illinois. (*)

SALVA ROMERO, CAROLINE T., Instr. of Speech (1987). BA 1984, Queen's Col.; MA 1986, Kansas St. U. (*)

SAMELSON, FRANZ, Prof. Emeritus of Psychology (1957). Diploma in Psychology 1952, U. of Munich, Germany; PhD 1956, U. of Michigan. (*)

SANCHEZ, CHRISTINA E., Family Housing Coord., Housing and Dining Services (1996). BA 1993, Col. of William and Mary; MS 1996, James Madison U.

SANDERS, WILLIAM H., Prof. Emeritus of General Engineering Tech. (1973). BS 1951, MS 1957, U. of Oklahoma.

SANDERSON, MICHAEL W., Asst. Prof. of Clinical Sciences (1995). DVM 1988, Colorado State Univ.; MS 1995, Washington St. U.

SANNER, ALBERT E., Assoc. Prof. Emeritus of Arch. (1963). BS Arch 1948, BS Arch Engg. 1950, U. of Illinois; MArch 1966, U. of Nebraska. Registered Architect. (*)

SARGEANT, JAN M., Asst. Prof., Food Animal Health and Management (1997). DVM 1986, MS 1992, PhD 1996, U. of Guelph, Canada.

SATZLER, LARRY, Instr. of Management (1996). BS 1987, MS 1989, Kansas St. U.

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SCHAFER, DAVID E., Prof. of Animal Sciences and Industry; Ext. Specialist, Meats (1972). BS 1963, U. of Minnesota; MS 1968, S. Dakota St. U.; PhD 1972, Kansas St. U.

SCHAFFER, VERNON A., Assoc. Agronomist of Agronomy, Foundation Seed Production, Agr. Exp. Sta. (1987). AS 1979, Pratt Comm. Col.; BS 1981, Kansas St. U.

SCHALLES, DIANNA, Instr. of Hotel, Restaurant, Institution Management and Dietetics (1993). BS 1983, Baker U.; MS 1985, Kansas St. U.

SCHALLES, ROBERT R., Prof. Emeritus of Animal Sciences and Industry; Animal Breeding Research Scientist, Agr. Exp. Sta. (1966). BS 1963, Colorado St. U.; MS 1966, PhD 1966, Virginia Poly. Inst. (*)

SCHAPAUGH, WILLIAM T., Prof. of Agronomy; Research Soybean Geneticist, Agr. Exp. Sta. (1978). BS 1975, MS 1977, Iowa St. U.; PhD 1979, Purdue U. (*)

SCHAPLOWSKY, TERRY W., Research Assoc. of Hort. (1980). BS 1979, Kansas St. U.

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SCHAUB, RODNEY L., Co. Ext. Agent, Agr., Osage Co., Lyndon (1990). BS 1980, Kansas St. U.

SCHEELE, JOHN O., Asst. Instr. of Animal Sciences and Industry (1986). BS 1966, Kansas St. U.

SCHEER, RICHARD K., Assoc. Prof. Emeritus of Philosophy (1968). AB 1950, U. of Nebraska; MA 1951, U. of Florida; PhD 1958, U. of Nebraska. (*)

SCHEIDT, RICK JAMES, Prof. of Family Studies and Human Services (1976). BA 1967, MA 1969, California St. U.; PhD 1973, U. of Nebraska. (*)

SCHELL, LEO M., Prof. Emeritus, Education (1966). AB 1955, Bethany Col.; MS 1962, U. of Kansas; PhD 1964, U. of Iowa. (*)

SCHELLHARDT, THOMAS G., Assoc. VP for Administration and Finance (1986). BS 1967, Southern Illinois U.; MS 1975, Purdue U.

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SCHENCK–HAMLIN, DONNA C., Instructor, ISSA, KSU Librarian (1983). BA 1975, MLS 1976, U. of Oregon; MM 1984, Kansas St. U.

SCHENEMAN, C. STEPHEN, Coordinator; Leader, Professional Dev. (1989). BS 1970, MS 1971, U. of Missouri; PhD 1980, Ohio St. U.

SCHILTZ, DAVID A., Instr. of Aviation Maintenance Tech. (1990). A&P 1981, Lake Area Vocational Tech. School; Licenses: MD 500 factory-approved pilot/mechanic in helicopter, commercial single, multi-fixed wing rotorcraft, A&P with inspection authorization.

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SCHLENDER, JOHN R., Prof. Emeritus of Agricultural Economics; Ext. Agricultural Economist, Farm Management (1951). BS 1951, Kansas St. U.; MS 1960, Oregon St. U.; PhD 1969, Purdue U.

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SCHLUP, JOHN R., Prof. of Chemical Engineering (1983). BS 1975, Kansas St. U.; PhD 1981, California Inst. of Tech. (*)

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SCHNEIDER, MARY WILLIS, Prof. Emerita of English (1964). BA 1949, MA 1952, St. U. of Iowa.; PhD 1964, U. of Minnesota. (*)

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SCHOFIELD, EILEEN, Senior Agricultural Editor, Communications (1982). MA 1966, Columbia U.

SCHONEWEIS, DAVID A., Prof. of Food Animal Medicine (1966). BS 1956, DVM 1956, MS 1971, Kansas St. U. (*)

SCHONING, POLLY, Prof. of Pathology, Dept. of Pathology and Microbiology; Research Pathologist (1979). DVM 1964, MS 1970, PhD 1979, Kansas St. U.; Diplomate 1982, American Col. of Vet. Pathologists. (*)

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SCHWENKE, JAMES R., Assoc. Prof. of Statistics; Statistical Consultant, Agr. Exp. Sta. (1986). BA 1973, MA 1977, U. of S. Florida; PhD 1982, Kansas St. U. (*)

SCHWULST, FRANK J., Assoc. Prof., Sheep Research Scientist, NW Research–Ext. Cntr. (1974). BS 1961, U. of Wisconsin; MS 1966, PhD 1968, U. of Nebraska. (*)

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SEARS, ROLLIN G., Prof. of Agronomy; Research Wheat Geneticist, Agr. Exp. Sta. (1980). BS 1972, MS 1974, Montana St. U.; PhD 1979, Oregon St. U. (*)

SEATON, RICHARD H., U. Attorney (1971). AB 1959, Harvard Col.; LLB 1963, Harvard Law School.

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SEEDLE, C. DONALD, Assoc. Prof. of Epidemiology; Research Epidemiologist (1984). DVM 1963, Colorado St. U.; MS 1968, U. of Maryland; Diplomate 1986, American Col. of Vet. Preventative Medicine.

SEGO, R. JEAN, Asst. Dean of Human Ecology; Instr. of Human Ecology (1967). BA 1960, Friends U.; MS 1967, Kansas St. U.

SEIB, PAUL A., Prof. of Grain Science and Industry; Research Biochemist, Agr. Exp. Sta. (1970). BS 1958, PhD 1965, Purdue U. (*)

SEIFERS, DALLAS L., Assoc. Prof. of Plant Pathology; Research Plant Pathologist, Agricultural Research Center–Hays (1982). BS 1974, U. of Missouri; MS 1976, PhD 1980, Mississippi St. U. (*)

SEITZ, LARRY M., Adjunct Assoc. Prof. of Grain Science and Industry; USDA Grain Marketing Research Cntr. (1979). BS 1962, Kansas St. U.; MS 1965, PhD 1966, U. of Illinois. Adjunct appt. (*)

SELF, HUBER, Prof. Emeritus of Geography (1947). BS 1941, Central Oklahoma St. Col.; MS 1947, Oklahoma St. U. (*)

SELFRIDGE, O. JOHN, Assoc. Prof. of Arch. (1969). BA 1959, U. of Kansas; MCP 1964, Ph.D. 1996, Yale U. (*)

SELIGSON, THEODORE H., Adjunct Prof. of Arch. (1991). BArch 1953, Washington U.

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SELL, PHILIP L., Co. Ext. Agent, Hort., Shawnee Co., Topeka (1978). BS 1970, MS 1971, Kansas St. U.

SELTZER, KATHRYN N., Instr. of English (1983). BS 1972, U. of Missouri, MA 1981, Kansas St. U.

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SESLER, WILLIAM H., Dir., Purchasing (1956). BS 1954, Kansas St. U.

SETSER, CAROLE S., Prof. of Foods and Nutrition; Agr. Exp. Sta. (1976). BS 1962, U. of Missouri; MS 1964, Cornell U.; PhD 1971, Kansas St. U. (*)

SETSER, DONALD W., U. Distinguished Prof. of Chemistry (1963). BS 1956, MS 1958, Kansas St. U.; PhD 1961, U. of Washington. (*)

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SEYLER, H. L., Assoc. Prof. of Geography (1970). BA 1963, MA 1967, Kansas St. U.; PhD 1971, Indiana U. (*)

SHACKELTON, ELISA A., Co. Ext. Agent, Family and Consumer Sciences and Community Development, McPherson Co., McPherson (1995). BS 1984, Colorado St. U.

SHAFER, KAREN, Dir. of Alumni Communications, K-State Alumni Association (1994). BS 1987, Kansas St. U.

SHANKLIN, CAROL, Prof. of Hotel, Restaurant, Institution Management and Dietetics (1990). BS 1973, MS 1974, PhD 1976, U. of Tennessee. (*)

SHANKS, SHANE, Editorial Dir./Asst. Dir. of U. Publications (1989). BA 1987, Baker U.; Postgraduate Diploma in Journalism Studies 1988, U. of Wales at Cardiff.

SHANTEAU, JAMES C., Dir., Inst. for Social and Behavioral Research; Prof. of Psychology (1971). BA 1966, San Jose St. Col.; PhD 1970, U. of California, San Diego. (*)

SHAPIRO, MARK, Prof. and Head of Arch. (1997). BArch 1973, U. of Cape Town, South Africa; M City Planning and Urban Design 1976, Harvard U. Registered Architect. (*)

SHAW, BRADLEY A., Dir. of International Studies, Assoc. Prof. of Modern Languages (1974). BA 1968, Lewis & Clark Col.; MA 1969, Northwestern U.; PhD 1974, U. of New Mexico. (*)

SHEARER, BETH, Dir. of Development, Col. of Tech. and Aviation (1995). BS 1977, Emporia St. U.

SHELTON, LEWIS E., Assoc. Prof. of Speech (1973). BA 1963, Taylor U.; MA 1965, Indiana U.; MA 1968, PhD 1971, U. of Wisconsin. (*)

SHENKEL, CLAUDE WESLEY, JR., Prof. Emeritus of Geology (1949). BS 1941, Kansas St. U.; MS 1947, PhD 1952, U. of Colorado. (*)

SHENOY, CATHERINE, Asst. Prof. of Finance (1991). BS 1979, MBA 1983, PhD 1991, U. of Kansas.

SHEROW, JAMES E., Assoc. Prof. of History. MA 1976; MA 1978, Wichita St. U.; PhD 1987, Univ. of Colorado. (*)

SHERWOOD, PETER M. A., U. Distinguished Prof. and Head of Chemistry (1985). BSc 1967, St. Andrews U.; MA 1970, PhD 1970, ScD 1995, Cambridge U.; FRSC, CChem 1982; F. Inst. P., CPhys 1996. (*)

SHETTY, KATEEL G., Research Assoc. of Plant Pathology (1994). BS 1980, MS 1984, U. of Agric. Sciences; PhD 1994, Kansas St. U.

SHEU, CHWEN, Assoc. Prof. of Management (1990). BS 1978, National Chung-Hsing U.; MS 1985, Iowa St. U.; PhD 1990, Ohio St. U. (*)

SHIRLEY, JOHN E., Assoc. Prof. of Animal Sciences and Industry, Dairy Cattle Nutrition and Management (1985). BS 1968, MS 1970, Western Kentucky U.; PhD 1973, Michigan St. U. (*)

SHOEMAKER, LORI L., Co. Ext. Agent, Family and Consumer Sciences and 4–H, Rice Co., Lyons (1983). BS 1983, Kansas St. U.

SHOOP, ROBERT J., Prof., Education (1976). BA 1968, MDiv 1972, Wittenberg U.; PhD 1974, U. of Michigan. (*)

SHOULBERG, DONALD J., Adjunct Asst. Prof. of Human Dev. and Family Studies (1983). PhD 1975, U. of Kansas. (*)

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SHROYER, MARGARET G., Assoc. Prof., Assoc. Project Dir., Education (1987). BA 1975, U. of California; MS 1984, PhD 1987, Kansas St. U. (*)

SHRYOCK, SAM, Dir. of Information Systems, KSU Alumni Assoc. (1993). BS 1986, Ferris St. College, Michigan.

SHULT, ERNEST E., Regents Distinguished Prof. of Mathematics (1974). BA 1958, MA 1961, Southern Illinois U.; PhD 1964, U. of Illinois. (*)

SHULTIS, J. KENNETH, Prof. of Mechanical and Nuclear Engineering; Dir., Inst. for Computational Research in Engineering and Science (1969). BASc 1964, U. of Toronto; MS 1965, PhD 1968, U. of Michigan (*)

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SIDWELL, RONALD A., Assoc. Research Prof. of Physics (1993). BA 1966, U. of Maryland; PhD 1970, Indiana U. (*)

SIEBERT, JAY D., Asst. Prof.; International Agricultural Programs (1982). BA 1969, Tabor Col.; MS 1976, Kansas St. U.; PhD 1982, U. of Georgia.

SIEPL–COATES, SUSANNE, Assoc. Prof. of Arch. (1984). Dipl. Ing. 1979, U. of Hannover, West Germany; MArch 1982, U. of California at Berkeley. (*)

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SIMONS, GALE G., Prof. of Electrical and Computer Engg. (1977). BS 1962, MS 1965, PhD 1969, Kansas St. U. (*)

SIMSER, CHARLENE, Asst. Prof., Cataloger, KSU Libraries (1996). BA 1980, U. of Maryland; MLS 1996, U. of S. Florida.

SINGH, GURDIP, Assoc. Prof. of Computing and Information Sciences (1991). BET 1986, Indian Inst. of Tech.; MS 1989, PhD 1991, SUNY, Stonybrook. (*)

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SISK, ENSLEY J., Assoc. Prof. Emeritus; Ext. Specialist, Organization and Leadership Dev. (1960). BS 1954, MS 1968, Kansas St. U.

SIXBURY, GLENN R., Asst. Dir. for Computing, Cntr. for Faculty Evaluation and Dev. (1988). BS 1986, Kansas St. U.

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SKINNER, DANIEL Z., Adjunct Assoc. Prof. of Agronomy; Research Alfalfa Geneticist (1990). BA 1978, Saint Cloud St. U.; MS 1983, PhD 1987, Kansas St. U. (*)

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SLOAT, FLOYD B., Assoc. Prof. Emeritus of Mathematics (1946). BA 1938, Ouachita Col.; MA 1941, U. of Arkansas.

SLOCOMBE, JOHN W., Prof. of Biological and Agricultural Engineering (1985). BS 1977, MS 1979, Kansas St. U.; PhD 1983, Iowa St. U. (*)

SLODERBECK, PHILLIP E., Prof. of Entomology, Ext. Specialist, Entomology, Southwest (1981). BS 1974, MS 1977, Purdue U.; PhD 1981, U. of Kentucky. (*)

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SMITH, MICHAEL, Asst. Track and Field Coach (1997). BS 1988, Bucknell U.; MS 1989, U. of New York, Albany; MS 1996, Kansas St. U.

SMITH, MICHAEL, Asst. Football Coach (1997). BS 1995, Kansas St. U.

SMITH, NATALIE T., Certified Sign Language Interpreter, Disabled Student Services (1996). KQAS Certified 1990.

SMITH, OTHELLO D., Adjunct Clinical Assoc. of Medical Tech. (1979). AB 1947, MD 1951, U. of Kansas.

SMITH, PAUL E., Asst. Prof of Biochemistry; Biochemist Agr. Exp. Stat. (1996). BS 1985, PhD 1988, U. of Liverpool.

SMITH, RONALD C., Instr. of Aviation Maintenance Tech. (1981). Licenses: FAA Aviation Maintenance Technician (A&P), FAA Inspection Authorization, FAA Designated Written Test Examiner.

SNEAD, BRUCE C., Instr., Kansas Industrial Ext. Service (1982). BA 1974, California St. U.

SNELL, RICHARD C., Co. Ext. Agent, Agr., Barton Co., Great Bend (1981). BS 1977, Kansas St. U.

SNELL, ROBERT ROSS, Prof. of Civil Engineering (1957). BS 1954, MS 1960, Kansas St. U.; PhD 1963, Purdue U.; Professional Engineer, 1959. (*)

SNYDER, BILL D., Head Football Coach (1988). BA 1963, William Jewell Col.; MA 1965, Eastern New Mexico U.

SNYDER, SEAN, Asst. Athlectics Dir./Football Operations (1997). BS 1994, Kansas St. U.

SNYDER, GERRY. Assoc. Spec., Multimedia Tech. Specialist, Communications (1997). BS 1981, MS 1996, U. of Idaho.

SOBERING, FREDERIC D., Prof. Emeritus; Dir. of Ext. (1977). BS 1950, U. of Manitoba; MS 1963, N. Dakota St. U.; PhD 1966, Oklahoma St. U.

SOCOLOFSKY, HOMER E., Prof. Emeritus of History (1946). BS 1944, MS 1947, Kansas St. U.; PhD 1954, U. of Missouri. (*)

SOIBELMAN, IAKOV, Prof of Mathematics (1993). PhD 1983, Rostov U. (*)

SOLDAN, DOROTHY B., Dir., Education (1990). BS 1969, MS 1976, PhD 1980, Kansas St. U.

SOLDAN, DAVID L., Prof. and Head of Electrical and Computer Engineering (1976). BS 1969, MS 1976, PhD 1980, Kansas St. U. (*)

SOLL, DEANNA L., Co. Ext. Agent, Family and Consumer Sciences; Logan Co., Oakley (1990). BS 1988, Wayne St. Col.

SOMERS, MICHAEL, Asst. Prof., Chair, Technical Services, KSU Libraries (1996). BA 1982, Oakland U.; MA 1985, MA 1989, Purdue U.; MLS 1991, U. of Michigan.

SORENSEN, EDGAR LAVELL, Adjunct Prof. Emeritus of Agronomy; Research Alfalfa Geneticist, USDA, SEA-AR (1955). BS 1941, MS 1952, Utah Agricultural Col.; PhD 1955, U. of Wisconsin. (*)

SORENSEN, CHRISTOPHER M., Prof. of Physics; Adjunct Prof. of Chemistry (1977). BS 1969, U. of Nebraska; MS 1973, PhD 1976, U. of Colorado. (*)

SORENSON, LEONARD ORLO, Prof. Emeritus of Agricultural Economics; Research Agr. Econ., Transportation and Marketing, Agr. Exp. Sta. (1955). BA 1951, MS 1953, PhD 1963, U. of Minnesota. (*)

SOSA, CARMEN, Asst. Prof. of Education (1994). BS 1974, U. of Puerto Rico; MS 1987, PhD 1993, U. of Iowa.

SPAETH, CLIFFORD W., Prof. of Animal Sciences and Industry; Ext. Specialist, Sheep (1974). BS 1965, MS 1967, Texas A&M; PhD 1974, Kansas St. U.

SPAFFORD, DAVID, Asst. Dir. of Development (1994). BS 1990, Kansas St. U.

SPARKE, ANN B., Co. Ext. Agent, Morris Co., Council Grove (1977). BS 1977, MS 1980, Kansas St. U.

SPAULDING, PAM M., Pharmacist, Lafene Health Ctr. (1993). BS 1988, U. of Texas; BS 1980, Kansas St. U.

SPAULDING, GREGORY L., Asst. Prof. of Mechanical Engineering Tech. (1996). BS 1980, MS 1984, Kansas St. U.

SPEARS, JACQUELINE, Assoc. Prof. of Education; Co-Dir. of Rural Clearinghouse for Lifelong Education and Dev. (1984). BS 1969, MS 1972, PhD 1988, Kansas St. U. (*)

SPEARS, MARIAN C., Prof. Emerita of Hotel, Restaurant, Institution Management and Dietetics; Agr. Exp. Sta. (1975). BS 1942, MS 1947, Western Reserve U.; PhD 1971, U. of Missouri. (*)

SPEAR, GEORGE, Adjunct Prof. of EDFAE (1989). BA 1948, Baker U.; MA 1965, U. of Missouri–Kansas City; PhD 1972, U. of Michigan. (*)

SPENCER, ALBERT E., Co. Ext. Agricultural Agent Emeritus, Pottawatomie Co., Westmoreland (1960). BS 1959, Kansas St. U.

SPENCER, GAYLE L., Coord. of Student Activities and Services (1997). BS 1983, U. of Nebraska at Omaha; MS 1987, Western Illinois U.

SPIKES, W. FRANKLIN, Prof., Education (1990). BS 1971, MS 1973, EdD 1975, Northern Illinois U. (*)

SPILLMAN, CHARLES KENNARD, Prof. of Biological and Agricultural Engineering; Ag. Exp. Sta. (1969). AS 1958, Vincennes U.; BS 1960, MS 1963, U. of Illinois; PhD 1969, Purdue U. (*)

SPIRE, LYNDA, Dir., National Conference Office (1987). BA 1971, West Texas St. U.; MA 1978, Kansas St. U.

SPIRE, MARK F., Prof. of Food Animal Medicine (1976). DVM 1974, Texas A&M; MS 1978, Kansas St. U.; Diplomate 1981, American Col. of Theriogenology. (*)

SPOONER, BRIAN S., Prof. and Dir. of Biology (1971). BS 1963, Quincy Col.; PhD 1969, Temple U. (*)

SPREHE, NANCY K., Asst. Prof., Reference, KSU Libraries (1992). BS 1970, Concordia Teachers Col.; MLS 1972, Emporia St. U.; MA 1987, Kansas St. U.

SPURGEON, WILLIAM E., Asst. Prof. of SW Research–Ext. Cntr. (1988). BS 1981, MS 1983, U. of Nebraska; PhD 1988, Colorado St. U.

ST. AMAND, PAUL, Asst. Prof. of Agronomy; Alfalfa Breeding/Genetics Research, Agr. Exp. Sta. (1997). BS 1984, MS 1987, Louisiana St. U.; PhD 1993, North Carolina St. U. (*)

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STADTLANDER, MARK, Asst. Editor, Communications (1994). BA 1992, Iowa St. U.

STAGG, BEVERLY D., Co. Ext. Ag. Agent Emeritus, McPherson Co., McPherson (1940). BS 1940, Kansas St. U.

STAGGENBORG, SCOTT, Asst. Prof. of Agronomy; Ext. Specialist, Crops and Soils, Northeast (1995). BS 1988, MS 1990, Kansas St. U.; PhD 1993, Texas Tech. U.

STAHLMAN, PHILLIP W., Prof.; Research Agronomist, Agricultural Research Center–Hays (1975). BS 1970, Panhandle St. Col.; MS 1973, N. Dakota St. U.; PhD 1989, U. of Wyoming. (*)

STAMEY, WILLIAM L., Dean Emeritus; Prof. of Mathematics (1953). AB 1947, U. of North Colorado; MA 1949, PhD 1952, U. of Missouri. (*)

STANDAGE, ROBERT E., Co. Ext. Agent, Thomas Co., Colby (1985). BS 1985, U. of Nebraska.

STANFIELD, SUSAN J., Instr. of Speech (1990). BA 1986, Baylor U.; MS 1989, U. of N. Texas.

STANLEY, RUTH A., Fort Riley Advisor (1978). BS 1970, N.W. Oklahoma St. U.; MS 1978, Kansas St. U.

STANNARD, JOHN C., Co. Ext. Agent, Agr., Russell Co., Russell (1989). BA, Chadron St. Col.

STANTON, NOEL R., Prof. of Physics (1993). BA 1960, Rutgers U.; PhD 1965, Cornell U. (*)

STARK, MAURICE A., Prof. of Accounting (1976). BS 1959, MS 1966, Kansas St. U.; PhD 1972, U. of Missouri; CPA 1961, Kansas; 1968, Michigan. (*)

STARKEY, WINONA M., Asst. Prof. Emerita; Ext. Specialist, Home Furnishings (1944). BS 1947, MS 1954, Kansas St. U.

STARRETT, SHELLI K., Asst. Prof. of Electrical and Computer Engineering (1994). BS 1988, MS 1990, U. of Missouri–Rolla; PhD 1994, Iowa St. U. (*)

STARRETT, STEVEN K., Asst. Prof. of Civil Engineering (1996). BS 1989, U. of Missouri–Rolla; MS 1992, PhD 1994, Iowa St. U. (*)

STAUFFER, ELLEN M., Conference Coord. (1986). BA 1973, Baylor U.; MS 1992, Kansas St. U.

STAVER, JOHN R., Prof., Education (1988). BSEd 1968, Indiana U.; MS 1973, Purdue U.; EdD 1978, Indiana U. (*)

STEELE, JAMES L., Adjunct Prof. of Biological and Agricultural Engineering (1989). BS 1969, MA 1963, PhD 1967, Iowa St. U. (*)

STEFFEN, JOHN D., Assoc. Prof., Education (1976). BA 1956, Hamline U.; PhD 1968, U. of Minnesota. (*)

STEGMEIER, WILLIAM D., Assoc. Prof. Emeritus, Research Agronomist Forage and Specialty Crops, Agricultural Research Center–Hays (1958). BS 1956, MS 1959, Colorado St. U.; PhD 1971, S. Dakota St. U.

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STEPHENS, GREGORY F., Assoc. Prof., Arts, Sciences, and Business, Col. of Tech. and Aviation (1982). AA 1971, Colby Comm. Col.; BS 1973, BA 1980, MS 1981, Fort Hays St. U.

STEPHENS, JANET F., Co. Ext. Agent, Family and Consumer Sciences, Greenwood Co., Eureka (1970). BS 1970, Pittsburg St. U.; MS 1978, Kansas St. U.

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STEWART, G. KENT, Prof., Education (1973). BS 1955, Indiana St. U.; MEd 1958, U. of Illinois; EdD 1964, Indiana U. (*)

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STOCK, WENDY A., Asst. Prof. of Economics (1996). BA 1992, Weber St. U.; PhD 1996, Michigan St. U. (*)

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STOCKLI, MARTIN P., Assoc. Research Prof. of Physics (1981). PhD 1978, ETHZ Zurich. (*)

STOKES, ROBERT W., Assoc. Prof. of Civil Engineering (1991). BA 1976, Antioch College; MS 1978, MCRP 1978, Ohio St. U.; PhD 1984, Texas A&M. (*)

STOKKA, GERALD L., Asst. Prof. of Animal Sciences and Industry; Beef Production Specialist (1995). DVM 1982, Iowa St. U. (*)

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STONE, LOYD R., Prof. of Agronomy; Research Soil Physicist, Agr. Exp. Sta. (1973). BS 1967, MS 1969, Oklahoma St. U.; PhD 1973, S. Dakota St. U. (*)

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STOOPS, ROBERT A., Asst. Football Coach (1988). BBA 1983, U. of Iowa.

STOTESBURY, SIDNEY D., Prof. of Arch. (1972). BS 1957, Florida St. U.; MArch 1970, PhD 1975, U. of California at Berkeley. (*)

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STOUSE, LAWRENCE D., Co. Ext. Dir. Emeritus, Johnson Co., Olathe (1966). BS 1963, MS 1982, Kansas St. U.

STOVER, STEPHEN L., Prof. Emeritus of Geography (1964). AB 1940, McPherson Col.; MA 1941, U. of Kansas; MS 1955, PhD 1960, U. of Wisconsin. (*)

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STRAFUSS, ALBERT C., Prof. Emeritus of Diagnostic Lab.; Research Pathologist (1968). BS 1952, DVM 1954, Kansas St. U.; MS 1958, Iowa St. U.; PhD 1963, U. of Minnesota. (*)

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STRAUSS, WARREN, Dir. of Internal Auditing (1989). BS 1979, Kansas St. U.

STRECKER, CHERYL G., Asst. U. Attorney (1993). BA 1984, Kansas St. U.; JD 1987, Cornell Law School.

STRECKER, GEORGE E., Prof. of Mathematics (1972). BS 1961, U. of Colorado; PhD 1966, Tulane U. (*)

STREETER, JOHN W., Assoc. Dir. of Administrative User Services, Computing and Telecommunications Activities (1985). BS 1973, MBA 1974, Kansas St. U.

STREETER, LINDA L, Admin. Asst., Dean of Engineering (1993). BS 1976 Kansas St. U.

STREETER, RAYMOND, Assoc. Prof. of Arch. (1984). BArch 1979, Kansas St. U.; MArch 1984, Harvard U. Registered Architect.

STRICKLER, JOHN K., Prof. Emeritus of Forestry; Ext. Forester (1961). BS 1957, U. of Missouri; MS 1967, Kansas St. U.

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STRODA, SALLY L., Research Asst., Animal Sciences and Industry (1988). BS 1988, Kansas St. U.

STRONG, RYAN D., Captain, US Army, Instr. of Military Science (1996). BA North Georgia Col., 1992.

STROUPE, CRAIG, Instr. of English (1995). BA 1977, U. of Florida; MA 1987, PhD 1994, Florida St. U.

STRUVE, JOHN M., Dir. of Budget (1987). BA 1963, Nebraska Wesleyan U.

STUCKY, TIMOTHY A., Farm Management Association Fieldman (1980). BS 1978, MS 1979, Kansas St. U.

STUCKY, DOUGLAS D., Farm Mgmt. Assn. Fieldman (1986). BS 1980, Kansas St. U.

STUMPEHAUSER, LASZLO, Prof. of Physical Education and Leisure Studies (1984). PhD 1969, U. of Toledo.

STUNKEL, EDITH L., Asst. Dir., Cntr. for Aging (1981). MSW 1975, U. of California.

STURR, EDWARD, Prof. Emeritus of Education and Art (1974). BA 1959, St. Ambrose Col.; MS 1964, Illinois Inst. of Tech.; EdD 1973, Illinois St. U. (*)

STUTEVILLE, DONALD L., Prof. of Plant Pathology; Research Forage Pathologist, Agr. Exp. Sta. (1964). BS 1959, MS 1961, Kansas St. U.; PhD 1964, U. of Wisconsin. (*)

SULEIMAN, MICHAEL WADIE, Distinguished Prof. of Political Science (1965). BA 1960, Bradley U.; MS 1962, PhD 1965, U. of Wisconsin. (*)

SULLIVAN, DENISE E., Co. Ext. Agent, Family and Consumer Sciences, Leavenworth Co., Leavenworth (1989). BS 1983, MS 1984, Kansas St. U.

SUN, SUSAN, Asst. Prof. of Grain Science and Industry (1996). BS, MS 1982, Ne Ag U, China; PhD 1993, U. of Illinois.

SUNDERMAN, HERBERT D., Assoc. Prof.; Soils Research Scientist, NW Research–Ext. Cntr. (1975). BS 1965, MS 1967, Kansas St. U.; PhD 1976, Texas A&M.

SUNDHEIM, RICHARD A., Asst. Prof. of Statistics (1978). BS 1971, MS 1974, Kansas St. U.; PhD 1978, Purdue U.

SUPERSON, ANITA M. Asst. Prof. of Philosophy (1989). BA 1981, DePaul U.; MA 1985, U. of Tennessee; PhD 1989, U. of Illinois–Chicago. (*)

SUROWSKI, DAVID B., Prof. of Mathematics (1977). BA 1971, California St. U. at Fullerton; MS 1972, PhD 1975, U. of Arizona. (*)

SUTTON, MARY ELLEN, Prof. of Music (1974). AA 1960, Graceland Col.; BM 1963, MM 1968, U. of Missouri at Kansas City. DMA 1975, U. of Kansas. (*)

SWALLOW, CLARENCE W., Prof. Emeritus of Agronomy (1954). BS 1951, MS 1955, Kansas St. U.

SWAN, FRANK D., Co. Ext. Agent, Agr., Stanton Co., Johnson (1980). BS 1973, West Texas St. U.

SWANSON, DIANE L., Asst. Prof. of Management (1997). BS 1980, BS Avila Col.; MA 1982, U. of Missouri–Kansas City; PhD. 1997, U. of Pittsburg.

SWANSON, JANICE C., Assoc. Prof. of Animal Sciences and Industry; Animal Behavior and International Livestock Programs (1992). BS 1977, MS 1980, U. of Connecticut; PhD 1988, U. of Maryland. (*)

SWANSON, STEPHEN, Assoc. Prof. of Environ. Engineering Tech. (1993). BA 1973, Bethany; MS 1976, U. of Nebraska; PhD 1989, U. of Umea.

SWARTZ, STUART ENDSLEY, Head and Prof. of Civil Engineering (1968). BS 1959, MS 1962, PhD 1968, Illinois Inst. of Tech.; Professional Engineer, 1970. (*)

SWEAT, DEANNA L., Co. Ext. Agent, Jewell Co., Mankato (1989). BS 1986, Kansas St. U.

SWEENEY, DANIEL W., Prof.; SE Agr. Res. Cntr. (1983). BS 1974, Kentucky Wesleyan Col.; MS 1978, Purdue U.; PhD 1982, U. of Florida. (*)

SWEET, DONNA E., Adjunct Asst. Prof. of Dietetics (1987). BS 1970, MS 1972, Wichita St. U.; MD 1979, U. of Kansas.

SWEGLE, WILLIAM M., Research Asst. of Biochemistry (1981). BS 1981, Texas Christian U.

SWENSON, DANIEL V., Prof. of Mechanical and Nuclear Engineering (1986). BS 1972, Kansas St. U.; MS 1978, Carnegie–Mellon U.; PhD 1986, Cornell U. (*)

SWILER, JAMES P., Asst. Prof. of Art (1970). BSE 1966, MFA 1970, Wichita St. U. (*)

SWISHER, BRIAN A., Co. Ext. Agent, 4–H, Montgomery Co., Independence (1976). BS 1975, Kansas St. U.

SWITZER, VERYL A., Asst. Prof.; Assoc. Dir. of Athletics/Asst. VP (1969). BS 1954, MS 1974, Kansas St. U.

SYLVESTER, VIRGINIA M., Interim Asst. Dean of Arts and Sciences; Arts and Sciences Advisor (1989). BA 1974, St. Mary-of-the-Woods Col.; MA 1977, U. of Dayton; A.B.D. 1992, Ohio St. U.

TAKEMOTO, DOLORES, Prof. of Biochemistry; Assoc. Biochemist, Agr. Exp. Sta. (1982). BS 1971, Ball St. U.; MS 1973, Colorado St. U.; PhD 1979, U. of Southern California. (*)

TAKEMOTO, LARRY J., Prof. of Biology (1978). BA 1967, Hartwick Col.; MS 1968, Yale U.; PhD 1974, Colorado St. U., Fort Collins. (*)

TALAB, ROSEMARY STURDEVANT, Assoc. Prof., Education (1984). BA 1971, Wichita St. U.; MA 1975, Arizona St. U.; PhD 1979, U. of Southern California. (*)

TANG, XIAO-YAN, Asst. Prof. of Plant Pathology; Plant Molecular Biologist, Agr. Expt. Sta. (1997). BS 1986, Beijing Agr. U.; MS 1989, Acad. Sinica; PhD 1995, Purdue U.

TARRANT, DONALD H., Dir. Emeritus of Information Systems, Planning and Evaluation Services (1970). BS 1948, Morningside Col.; MS 1959, Iowa St. U.

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TAVAKKOL, AMIR, Assoc. Prof. of Finance (1990). BS 1974, Shiraz (Pahlavi) U.; MA 1975, PhD 1979, Kansas St. U. (*)

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TAYLOR, RICHARD J., Adjunct Clinical Assoc. of Med. Tech. (1976). BA 1944, U. of California at Berkeley; MD 1949, Creighton U.

TAYLOR, ROBERT BARTLEY, Prof. Emeritus of Anthropology (1957). BS 1949, Wheaton Col.; MA 1951, PhD 1960, U. of Oregon. (*)

TAYLOR, SUSAN WASHBURN, Asst. Prof. of Economics (1989). BA 1984, Blue Mountain Col.; MS 1986, PhD 1989, Louisiana St. U. (*)

TAYLOR–ARCHER, MORDEAN, Assoc. Provost for Diversity and Dual Career Development (1990). BS 1969, U. of Ozarks; MA 1972, U. of Arkansas; PhD 1979, Brandeis U.

TEENER, LINDA I., Executive Dir., UFM (1990). BS 1974, MS 1977, Kansas St. U.

TENEYCK, GEORGE ROBERT, Assoc. Prof. Emeritus of Biological and Agricultural Engineering (1964). BS 1951, MS 1970, Kansas St. U.

TERHUNE, TERRY N., Adjunct Asst. Prof. of Pharmacology (1990). BS 1981, DVM 1983, PhD 1988, Kansas St. U.

TERRASS, JOYCE J., Prof. Emerita, Education (1973). BS 1942, Kansas St. U.; MS 1957, Colorado St. U.; PhD 1969, Purdue U. (*)

TERRY, ROGER V., Prof.; IET Coord., Communications (1981). BS 1976, Brigham Young U.; MS 1979, PhD 1981, Kansas St. U.

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THIBODEAUX, DIANA M., Coord., Undergraduate Recruitment, Col. of Arch., Planning, and Design (1995). BA 1994, Kansas St. U.

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THIERER, JODI L., Instr. of Marketing and International Business (1984). BS 1980, MBA 1984, Kansas St. U.

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THOLE, H. THOMAS, Co. Ext. Agent Emeritus, Hort., Barton Co., Great Bend (1965). BS 1965, Oklahoma St. U.

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THOMAS, LYNN R., Assoc. Prof. of Accounting (1986). BA 1971, MBA 1973, Kansas St. U.; CPA 1973, Kansas; PhD 1980, U. of Kansas. (*)

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THORSELL, G. CATHERINE, Co. Ext. Agent, Family and Consumer Sciences, Gray Co., Cimarron (1968). BS 1968, Kansas St. U.

THORSON, I. EUGENE, Prof. Emeritus of Architectural Engineering and Construction Science (1948). BS 1940, U. of Washington; Professional Engineer 1948, Washington and Kansas.

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TIERNEY, WILLIAM I., JR., Prof. of Agricultural Economics; Ext. Agricultural Economist, Marketing (1983). BS 1972, MA 1977, U. of Missouri; PhD 1983, Michigan St. U.

TILGHMAN, BENJAMIN R., Prof. Emeritus of Philosophy (1967). AB 1950, MA 1954, Washington U.; PhD 1959, U. of Washington. (*)

TILLEY, KATHY A., Asst. Prof. of Grain Science and Industry, USDA (1989). BS 1986 Emporia St. U.; MS 1987, PhD 1993, Kansas St. U. (*)

TILLMAN, FRANK AUBREY, Prof. of Industrial and Manufacturing Systems Engineering (1965). BS 1960, MS 1961, U. of Missouri; PhD 1965, St. U. of Iowa; Professional Engineer 1970, California. (*)

TIMBERLAKE, MICHAEL F., Prof. of Sociology; Head of Sociology, Anthropology and Social Work (1991). BA 1973, U. of Denver, MA 1975, PhD 1979, Brown U. (*)

TINKLIN, GWENDOLYN LaVERNE, Prof. Emerita of Foods and Nutrition; Agr. Exp. Sta. (1943). BS 1940, MS 1944, Kansas St. U. (*)

TIPPIN, KEENER A., III, Research News Coord., News Services (1997). BA 1984, Lincoln U.

TISSERAT, NED A., Prof. of Plant Pathology; Ext. Specialist, Plant Pathology (1984). BS 1976, Colorado St. U.; MS 1978, Texas A&M; PhD 1982, U. Wisconsin–Madison. (*)

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TITUS, RALPH S., Prof. Emeritus of Communications; Mgr., Radio Station KKSU (1961). BS 1955, MS 1964, Kansas St. U.

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TOEWS, DUANE A., Co. Ext. Agent, Washington Co., Washington (1992). BS 1990, MS 1991, Kansas St. U.

TOKACH, MICHAEL D., Assoc. Prof. of Animal Sciences and Industry; Ext. Specialist, Livestock Production and Management, Northeast (1991). BS 1986, N. Dakota St. U.; MS 1988, Kansas St. U.; PhD 1991, U. of Minnesota. (*)

TOLENTINO, BETH HARTENSTEIN, Asst. Dir. of Alumni Communications, K-State Alumni Association (1983). BA 1980, MS 1988, Kansas St. U.

TOMB, A. SPENCER, Assoc. Prof. of Biology (1974). BS 1966, U. of the South; PhD 1970, U. of Texas, Austin. (*)

TOMICH, JOHN M., Prof. of Biochemistry (1992). BA 1974, U. of Connecticut; MS 1976, Purdue U.; PhD 1980, Guelph-Waterloo (Canada) Ctr. for Graduate Work. (*)

TONN, STEVEN R., Co. Ext. Agent, Agr. and 4–H, Marion Co., Marion (1973). BS 1973, MS 1981, Kansas St. U.

TOOT, JANICE C., Co. Ext. Agent Emerita, Family and Consumer Sciences, Seward Co., Liberal (1966). BS 1966, Kansas St. U.

TOUT, ROBERT C. (1977). Dir. Emeritus, Student Health; BS 1949, West Texas St. U.; MD 1953, Southwestern Medical School of U. of Texas.

TOWNSEND, JAMES B., Prof. Emeritus of Management (1977). BS 1945, U.S. Military Acad.; MA 1964, DBA 1976, Georgia Washington U. (*)

TRACZ, FRANK, Assoc. Prof. of Music (1993). BME 1978, Ohio St. U.; MM 1980, U. of Wisconsin–Madison; PhD 1987, Ohio St. U. (*)

TREDWAY, TIMOTHY C., Asst. Prof. of Architectural Engineering and Construction Science (1994). BS 1986, Kansas St. U.; MS 1995, U. of Kansas. (*)

TRENARY, ROGER C., Instr. of Economics (1983). BA 1968, MA 1972, Wayne St. U.

TRENNEPOHL, HARLAN JEAN, Assoc. Prof. Emeritus, Education (1956). BS 1947, MS 1951, Emporia St. U.; EdD 1956, U. of Colorado.

TRENT, CYNTHIA, Academic Outreach Coord. (1983). BA 1974, Kansas St. U.; MEd 1981, North Carolina St. U.

TREWYN, R.W., Interim Vice Provost for Research and Interim Dean of Graduate School (1994). BS 1970, Wisconsin St. U.; PhD 1974, Oregon St. U.

TRIGO-STOCKLI, DIONISIA M., Research Assoc. of Grain Science and Industry (1989). BS 1978, Yisayas St. Col. of Ag., Philippines; MS 1981, U. of Philippines; PhD 1988, Kansas St. U.

TROCCHIA, PHILIP, Asst. Prof. of Marketing and International Business (1997). BS 1988, General Motors Institute; MBA 1990, Michigan St. U.; PhD. 1997, U. of Alabama.

TROTTER, MARILYN B., Dir. Emerita of New Student Programs (1967). BS 1965, MS 1967, Kansas St. U.

TROOIEN, TODD P., Asst. Prof. and Agr. Engineer Res. Sci., SW Research–Ext. Center (1996). BS 1983, MS 1985, South Dakota St. U.; PhD 1988, Colorado St. U.

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TROYER, RODNEY, Assoc. Prof. of Interior Arch. (1985). BArch 1971, Kansas St. U.; MIntArch 1985, Oregon.

TRUAX, RUBY C., Co. Ext. Home Economist Emerita. Sedgwick Co., Wichita (1959). BS 1936, Kansas St. U.

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TUINSTRA, MITCHELL, Asst. Prof. of Agronomy; Sorghum Breeding Research, Agr. Expt. Sta. (1997). BS 1991, Calvin Col.; MS 1993, PhD 1996, Purdue U.(*)

TUMMALA, KRISHNA, Prof. of Political Science (1988). MA 1958, Andra U. Waltair, MPA 1969, SUNY Albany; PhD 1974, U. of Missouri, Columbia. (*)

TUNSTALL, GEORGE C., Assoc. Prof. of Modern Languages (1973). BA 1964, Hamilton Col.; MA 1966, PhD 1968, Princeton U. (*)

TURNER, DEANNA K., Co. Ext. Agent, Family and Consumer Sciences, Clay Co., Clay Cntr. (1974). BS 1974, Kansas St. U.

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TURNQUIST, RALPH OTTO, Prof. Emeritus of Mechanical and Nuclear Engineering (1959). BS 1952, MS 1961, Kansas St. U.; PhD 1965, Case Inst. of Tech. (*)

TURTLE, ELIZABETH, Asst. Prof., Reference, KSU Libraries (1997). BS 1971, U. of Kansas; MLS 1983, Emporia St. U.

TWISS, NANCY, Special Asst. to the Provost; Advisor Emeritus, Arts and Sciences (1968). BA 1954, Colorado Col.; MS 1974, Kansas St. U.

TWISS, PAGE CHARLES, Prof. Emeritus of Geology (1953). BS 1950, MS 1955, Kansas St. U.; PhD 1959, U. of Texas, Austin. (*)

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ULRICH, JOHN M., Prof. Emeritus of Arch. Engg. Constr. Science (1988). MS 1965, Pennsylvania St. U.; Professional Engineer, 1961.

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UNRUH, CHESTER R., Prof. Emeritus; Assoc. St. Leader and Ext. Editor, Communications (1961). AB 1940, Bethel Col.; MS 1956, Kansas St. U.

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VITALI, FRANCES, Asst. Instr., MRRC, KSU Libraries (1995). BA 1976, National Col. of Education; BA 1985, MA 1987, Temple U.

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WALLACE, RODNEY, Co. Ext. Agent, Seward Co., Liberal (1996). BS 1978, Panhandle St. U.

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WALTER, TED L., Assoc. Prof. Emeritus of Agronomy (1951). BS 1949, U. of Nebraska; MS 1951, Colorado St. U.

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WALTERS, JOHN W., Adjunct Faculty (1988) BS 1960, Kansas St. U.; MS 1966, Oklahoma St. U.

WANG, XUEMIN "SAM," Assoc. Prof. of Biochemistry (1991). BS 1982, Huazhong Agricultural U. at Wuhan, PRC; MS 1984, Ohio St. U. at Columbus; PhD 1987, U. of Kentucky at Lexington. (*)

WANG, YOUQI, Asst. Prof. of Mechanical and Nuclear Engineering (1994). BS 1979, Wuhan U. of Tech.; MS 1982, PhD 1985, Shanghai Jiao Tong U. (*)

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WARD, KATHLEEN, Assoc. Prof.; Communications Specialist, Communications (1978). BS 1966, Drury Col.; MS 1977, Kansas St. U.

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WARMINSKI, NORMAN C., Co. Ext. Agent, Hort., Sedgwick Co., Wichita (1968). BS 1964, Oklahoma St. U.; MS 1968, Texas A&M.

WARMUTH, RALF, Asst. Prof. of Chemistry (1997). Pre-Diploma 1985, U. of Cologne; PhD 1992, Johann Wolfgang Goethe U. (*)

WARNER, STACEY M., Leader, Ext. Operations (1976). BS 1976, MS 1982, Kansas St. U.

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WARREN, ANN A., Instr. of English (1977). BA 1964, Florida Southern Col.; MA 1968, U. of Georgia.

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WARREN, LELAND E., Prof. of English (1976). BA 1966. Emory U.; MA 1968. U. of Georgia; PhD 1976. U. of Illinois. (*)

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WASSOM, CLYDE E., Prof. Emeritus of Agronomy; Corn Research Geneticist. Agr. Exp. Sta. (1954). BS 1949. MS 1951. PhD 1953. Iowa St. U. (*)

WATERS, CLARENCE E., Assoc. Prof. and Head of Architectural Engineering and Construction Science (1986). BS 1978. MS 1988. Kansas St. U.; PhD 1993. Pennsylvania St. U. (*)

WATNEY, W. LYNN, Adjunct Asst. Prof. of Geology (1988). BS 1970. MS 1972. Iowa St. U.; PhD 1985. U. of Kansas. (*)

WATSON, BOBBY J., Dir. of Facilities Maintenance. Div. of Facilities Management (1967).

WATSON, FREDERICK D., Asst. Prof. of History (1993). BA 1975. MA 1977. U. of Northern Colorado; PhD 1993. U. of Colorado.

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WATTS, CAROL MARTIN, Assoc. Prof. of Arch. (1983). BA 1971. Mount Holyoke; MArch 1975. U. of Washington; PhD 1987. U. of Texas–Austin. (*)

WATTS, DONALD, Prof. of Arch. and Planning (1983). BArch 1970. U. of Nebraska; MArch 1971, U. of California at Berkeley. Registered Architect. (*)

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WATTS, TRANDA W., Co. Ext. Agent, Gove City, Gove (1972). BS 1972, Fort Hays St. U.

WAUTHIER, RAYMOND AUGUST, Assoc. Prof. Emeritus of Physical Education. Dance, and Leisure Studies, and Education (1949). BS 1945, Albion Col.; MS 1947, Drake U. (*)

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WEAVER, OLIVER LAURENCE, Prof. of Physics (1970). BS 1965. California Inst. of Tech.; PhD 1970, Duke U. (*)

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WEISENBURGER, PATRICIA, Prof., Dir. Arch., Planning. and Design Library. KSU Libraries (1985). BA 1956, MA 1959. U. of Illinois; MLS 1981, Emporia St. U.

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WENDLING, LEO T., Prof. Emeritus of Ext. Biological and Agricultural Engineering (1947). St. Leader 1969; BS 1947, MS 1956, Kansas St. U.

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WESTFAHL, STEVEN A., Co. Ext. Agent, Agr., Sedgwick Co., Wichita (1970). BS 1970, Kansas St. U.

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